

**SOVIET MEN OF
SCIENCE**

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SOVIET MEN OF SCIENCE

Academicians and Corresponding Members
of the Academy of Sciences of the USSR

by

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PREFACE

The purpose of this volume is to present to the Western world the biographies of leading Soviet scientists. This is done in an attempt to bring a better understanding on the part of the West of the outstanding achievements of the scientists of the East. It is further hoped that this volume will facilitate a scientist to scientist contact and thereby lead to fruitful individual collaboration.

The material presented has been obtained from sources scattered throughout Soviet literature. A copy of the manuscript was sent to the President of the Soviet Academy of Sciences three months before presenting it to the publisher. Individual biographies were sent to the Soviet scientists for approval or for correction. Unfortunately, the Academy was not able to check on the manuscript. On the other hand, many Soviet scientists have graciously corrected their biographies. For this we are thankful.

This work was facilitated in its early stages by Professor George Krugovoy, William Causey, Valentina Kaye, Olga Ploschek, Boris Sovetov.

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AFANAS'YEV, GEORGII DMITRIYEVICH (Geologist)

G. D. Afanas'yev was born March 4, 1906. Upon graduating from the Leningrad Institute in 1930, he worked at the Institute of Petrography, and later at the U.S.S.R. Academy of Sciences Institute of Geological Sciences. From 1948 to 1953, he was scientific secretary at the Department of Geological and Geographic Sciences of the U.S.S.R. Academy of Sciences. He has been a member of the Communist Party of the Soviet Union since 1948, and was elected to the U.S.S.R. Academy of Sciences as a Corresponding Member in 1953. He was assistant to the chief editor of Proceedings of the U.S.S.R. Academy of Sciences, Geological Series, from 1954, and chief editor of a review journal, *Geology*, from 1956.

Afanas'yev's main works deal with the study of magmatic rocks of the Caucasus and to questions on petrogenesis.

As of 1961, Afanas'yev was Deputy Chief Scientific Secretary of Academy of Sciences U.S.S.R.

Bibliography:

Lake Syevan bottom sedimentation.

Lake Syevan Basin (Gokcha), 3, #2, Leningrad, 1933.

Granitoids of Ancient Intrusive Complexes of North Western Caucasus.' Moscow: 1950.

The importance of granitization as a process leading to the formation of granitoid masses. *Congres Geologique International. Comptes rendus de la XIX session.* Alger, 1952, Fasc. XV, Alger, 1954, 397-413.

Main results of a study of magmatic geology in the North Caucasus folding territory. *Izvest. Akad. Nauk S.S.R., Geol. Ser.*, 1956, #3.

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AGEEV, NIKOLAI VLADIMIROVICH (Metallurgist)

N. V. Ageev was born June 17, 1903. Upon completing the Leningrad Polytechnical Institute in 1926, he started working there. From 1938 to 1940, and again from 1942 to 1951, he worked at the U.S.S.R. Academy of Sciences Institute of General and Inorganic Chemistry. In 1951 he was at the U.S.S.R. Academy of Sciences Institute of Metallurgy. In 1952 he was made

Corresponding Secretary for the journal "Problems of Contemporary Metallurgy," and in 1956 was made Chief Editor of the journal "Metallurgy Abstracts." Since 1944 he has been a member of the Communist Party of the Soviet Union. He was elected to the U.S.S.R. Academy of Sciences as a Corresponding Member in 1946.

Ageev's principal works deal with research in metallic alloys. He has specialized in treating problems of physical-chemical analysis of metallic alloys with the aid of x-rays and has studied chemical bonding in metallic alloys by the electron density method.

Bibliography:

Roentgenography of Metals and Alloys. Leningrad: 1932.

Thermal Analysis of Metals and Alloys. Leningrad: 1936.

The Chemistry of Metallic Alloys. Moscow-Leningrad: 1941.

The Nature of Chemical Bonding in Metallic Alloys. Moscow-Leningrad: 1947.

and L. P. Grankova, P. K. Novik. Aluminum's effect on the stability of beta-phase in alloys of Ti-Mo-Fe. Diklady Akad. Nauk S.S.S.R. 146, #2, 351-54 (1962).

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AGOSHKOV, Mikhail Ivanovich (Mining Expert)

M. I. Agoshkov was born October 30, 1905. He graduated from the Far East Polytechnic Institute in Vladivostok in 1931. From 1933 to 1941 he worked at the North Caucasus Mining Metallurgical Institute, and at the U.S.S.R. Academy of Sciences Institute of Mining in 1941, where he became deputy Director in 1952.

Agoshkov's works are devoted to exploitation of ore deposits. He has been awarded two orders and also medals. He was head of the foreign section of the U.S.S.R. Academy of Sciences until 1960.

As of 1961, Agoshkov was a Deputy Chief Scientific Secretary of Academy of Sciences U.S.S.R.

In December 1962 it was announced that Agoshkov was appointed acting Chief Scientific Secretary of the Presidium of the U.S.S.R. Academy of Sciences.

Bibliography:

Exploitation of Ore Deposits, 3rd ed. Moscow: 1954 (translated into Rumanian, Bulgarian, Hungarian, and Chinese).

On the Determination of the Productivity of a Mine. Moscow: 1948 (translated into Czech and Polish).

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ALEKIN, OLEG ALEKSANDROVICH (Hydrochemist)

O. A. Alekin was born August 23, 1908. In 1938, he graduated from Leningrad University. From 1929-1951, he worked at the Hydrological Institute in Leningrad. In 1951 he became Director of the U.S.S.R. Academy of Sciences Hydrochemical Institute where he remained until 1961 when he was reassigned to the Laboratory of Limnology. He was rector of Rostov University in 1954. Since 1942, he has been a member of the Communist Party of the Soviet Union. In 1953, Alekin was elected to the U.S.S.R. Academy of Sciences as a Corresponding Member. He received a Stalin Prize in 1951. He has also been awarded three orders and medals.

Alekin's major work is in the chemistry of natural waters, the study of hydrological conditions of rivers and lakes, the development of procedures of chemical analysis of waters (determination of the content of dissolved oxygen, gold, and of pH).

Bibliography:

General Hydrochemistry. Leningrad: 1948.

Hydrochemistry of the Rivers of U.S.S.R., Part 2-3. Leningrad: 1948-49 (Works of the Hydrological Institute, #10, 15).

Basis of Hydrochemistry. Leningrad: 1953.

Chemical Analysis of Inland Waters. Leningrad: 1954.

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ALEKSANDROV, ANATOLII PETROVICH (Nuclear Physicist)

A. P. Aleksandrov was born February 13, 1903. After graduating from Kiev University in 1930, he joined the staff of the Physico-Technical Institute of the U.S.S.R. Academy of Sciences. From 1946 to 1955, he was Director of the Institute

of Physical Problems of the U.S.S.R. Academy of Sciences. Aleksandrov was a participant at the two Geneva Conferences of the United Nations on Peaceful Uses of Atomic Energy in 1955 and 1958. In 1959 he visited the United States with the Soviet delegation of atomic energy experts. After I. V. Kurchatov's death (nuclear physicist, 1902-1960), Aleksandrov was named his successor as Director of the Kurchatov Institute. Aleksandrov became a Corresponding Member of the U.S.S.R. Academy of Sciences in 1943 and in 1953 an Academician. He is the recipient of a Stalin Prize.

Aleksandrov's scientific work deals with the physical nature of insulators and investigations of mechanical and electrical properties of high-polymers. He studied the properties of polymerized styrene, developed methods of its polymerization and constructed condensates from polystyrene. Aleksandrov also investigated the mechanical properties of other polymers and amorphous substances; he proposed a static theory of stability of solids. He developed a relaxation theory of elasticity, studied the solidification of polymers and the nature of phase transitions. He was also active in the development of nuclear reactors in the post World War II period.

As of 1961, Aleksandrov was a Member of the Presidium of the U.S.S.R. Academy of Sciences. He was elected as a delegate from R.S.F.S.R. to the Supreme Soviet on March 18, 1962.

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and N. S. Khlopkin, B. Ya. Gnesin, A. I. Gladkov. The Atomic-Ice-Breaker "Lenin". Atomnaya Energiya 5, #3, 257-276 (1958).

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ALEKSANDROV, BORIS KAPITONOVICH (Hydraulic Engineer)

B. K. Aleksandrov was born August 6, 1889. He graduated from the Petrograd Polytechnical Institute in 1917. He helped design the "Moscow" canal and plan the building of the Rybinsk and Uglich Hydroelectric Plants. In 1939 he was head and chief engineer of the "Greater Volga" Directorate of the State Trust for the Planning of Hydroelectric Power Plants and Centers. In 1918 he taught at a number of secondary and advanced schools. In 1946 he began teaching at the Moscow Institute of Energetics, where he became a professor in 1948. In 1953 he became a Corresponding Member of the U.S.S.R. Academy of Sciences.

The works of Aleksandrov deal with utilizing the energy of large plain rivers of the European part of the U.S.S.R. (Volga, Oka), the transfer of the flow of Northern rivers of Pechora and Onega into the Volga and Kama, and also with construction of buildings for hydroelectric buildings and navigable locks. He is the author of the project of the Kama Hydroelectric Power Station and dam and of the Kama multi-chambered navigable lock with utilization of an electric locomotive.

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ALEKSEEV, ALEKSANDR EMEL'YANOVICH (Electronic Engineer)

A. E. Alekseev was born November 27, 1891. In 1925, he graduated from the Leningrad Electrotechnical Institute. From 1908 to 1919, he was employed at an electric plant in Petersburg (Leningrad). Since 1936, he has been professor at the Leningrad Institute of Railroad Engineers. In 1953, he began working at the U.S.S.R. Academy of Sciences Institute of Electromechanics. He has been awarded a medal, the Order of Lenin and the Order of the Red Banner of Labor. In 1953 he became a Corresponding Member of the U.S.S.R. Academy of Sciences.

Alekseev has worked in the field of electric machines. He worked out the theory and methods of ventilation and heat calculation of electric machines. Under his direction the first Soviet electric traction machines, turbo and hydro-generators were built. He is concerned with electric traction on direct and

alternating currents. He participated in designing a rail-welding machine (Stalin Prize 1949).

Bibliography:

Electric Traction Motors, 2nd ed. Moscow: 1951.

Construction of Electric Machines. Leningrad-Moscow: 1949 (Lenin Prize 1951).

and M. P. Kostenko. Turbogenerators. Leningrad-Moscow: 1939.

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ALEKSEEVSKII, NIKOLAI EVGEN'EVICH (Physicist)

N. E. Alekseevskii was born in 1912. He completed the Leningrad Polytechnical Institute in 1936. From 1936-41, he was at the Ukraine Physico-Technical Institute in Khar'kov. From 1941-42 he worked as an x-ray technician at an evacuation hospital and then as an assistant in the physics department of the Medical Institute in Stalingrad. From 1942 he was at the U.S.S.R. Academy of Sciences Institute of Physical Problems in Moscow. In 1947-60 he was on the staff of the Department of Physics of Low Temperature of the Physics Faculty of Moscow State University, where he became a professor in 1950. In 1960 he became chairman of the department of experimental physics at the Moscow Physico-Technological Institute. In 1960 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences.

Alekseevskii's works deal with the physics of low temperature.

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ALEXANDROFF (ALEKSANDROV), PAVEL SERGEIEVICH (Mathematician)

P. S. Alexandroff was born May 7, 1896. In 1917 he graduated from Moscow University. He became a lecturer in 1921 and in 1929 was made professor. In 1921 he was elected a member of the Moscow Mathematical Society, in 1932 President, and in 1946 an Honorary Member. He has been a Corresponding Member of the U.S.S.R. Academy of Sciences since 1929 and since 1953 an Academician. Alexandroff is a member of the Berlin Academy of Sciences (Associate Member since 1950), the American Philosophical Society in Philadelphia, the National Academy of Sciences in Washington (since 1947), the

Göttingen Academy of Sciences (1929-38, and from 1945), the Polish Academy of Sciences and other societies. In 1943 he was awarded a Stalin Prize.

Alexandroff investigated the theory of point sets and the theory of the function of the real variable, obtaining such important results as the proof of the theorem on the power of Borel sets. In collaboration with P. S. Urysohn he developed in the Soviet Union the field of topology, becoming the head of the U.S.S.R. School of Topology. Among his former students are: L. Pontryagin, A. Tychonoff, A. Kurosh, Yu. Smirnov, G. Chogoshvili, K. Sitnikov and others. Alexandroff originated one of the main theories of topological spaces--the theory of bi-compact spaces. He also contributed in an essential way to the modern theory of dimensionality (in particular he founded the theory of the homological dimension); he was the founder of methods based on combinatory algebraic investigation of sets and spaces of a general nature; he proved a series of basic "laws of duality" (combining topological properties of the geometrical figure with topological properties of space complementary to it).

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and W. Ponomarev. On dyadic bicomacta. *Fundamenta Mathematicae*, 1962, 50, p. 419.

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A. D. Alexandrov was born August 4, 1912. He is Rector of Leningrad University. In 1946 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences. He has been a member of the Communist Party of the Soviet Union since 1951. In 1942 he was awarded a State Prize.

Alexandrov is the founder of the Soviet school of geometry in the large. He set up an intrinsic geometry of general surfaces.

In April 1959, Alexandrov visited the University of California at Berkeley.

Bibliography:

Inner Geometry of Convex Surfaces. Moscow-Leningrad: 1948.

Convex Polyhedra. Moscow-Leningrad: 1950.

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ALIKHANOV, ABRAM ISAAKOVICH (Nuclear Physicist)

A. I. Alikhanov was born March 4, 1904. In 1931 he graduated from Leningrad Polytechnical Institute. He had been on the staff of the Physico-Technical Institute of the U.S.S.R. Academy of Sciences since 1927 and became the Director of its Power Engineering Laboratories. In 1939 Alikhanov was elected a Corresponding Member of the U.S.S.R. Academy of Sciences and in 1943 an Academician. He has also been a member of the Armenian S.S.R. Academy of Sciences since 1943. In 1941 and 1948 he was a recipient of Stalin Prizes.

The first scientific investigations of Alikhanov were in the field of x-rays. In 1934 in collaboration with his brother, Artemii Isaakovich Alikhan'yan, he began research in radioactivity, and in the same year, jointly with M. S. Kozodaev and Alikhan'yan, discovered the pair emission by excited nuclei. In 1935, together with Alikhan'yan, he formulated the relationship between β -spectra and the atomic number of the element. In 1936, with Alikhan'yan and L. A. Artsimovich, Alikhanov proved experimentally the conservation of momentum during pair annihilation. Investigations of cosmic rays (1939) led Alikhanov, together with A. I. Alikhan'yan and S. Ya. Nikitin, to the discovery of unstable mesons. In 1949, he built the first reactor in the U.S.S.R., using heavy water as a moderator. At present Alikhanov is working on the development of nuclear reactors.

As of 1961, Alikhanov was Director of the Institute of Theoretical and Experimental Physics and is Chairman of the Commission on Cosmic Rays.

Bibliography:

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and A. I. Babaev, M. Ya. Balats, V. S. Kaftanov, L. G. Landsberg, V. A. Lyubimov, Yu. V. Obukov. Further studies

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ALIKHAN'YAN, ARTEMII ISAAKOVICH (Physicist)

A. I. Alikhan'yan was born July 24, 1908. He graduated from Leningrad University in 1931 and began, with A. I. Alikhanov, work in nuclear physics and cosmic rays. Since 1943 he has been an Academician of the Armenian SSR Academy of Sciences and since 1946 a Corresponding Member of the U.S.S.R. Academy of Sciences. In 1941 and 1948 he was awarded Stalin Prizes.

From 1934, Alikhan'yan, with A. I. Alikhanov and M. S. Kozodaev, discovered pair emission by excited nuclei. In 1935, Alikhan'yan, with Alikhanov, established the law of the dependence of beta-spectra on the atomic number of the element. The main work of Alikhan'yan is devoted to the study of cosmic rays. In association with Asatiani, he discovered showers with few particles in cosmic rays (the so-called narrow showers). Alikhan'yan also showed that in the composition of primary components of cosmic radiation there are particles present with energies up to 10^{17} electron-volts. In 1945 Alikhan'yan helped establish a cosmic ray station on Mountain Aragats, where he, with associates, conducted a magnetic analysis on the mass of cosmic ray particles.

In 1951-52 Alikhan'yan and his associates were successful in separating particles with a mass $\sim 200m_e$ in cosmic rays and also in obtaining some indication of the existence of particles with masses of approximately $600m_e$ and $950m_e$.

As of 1961, Alikhan'yan was Director of the Armenian Academy of Sciences Institute of Physics.

Bibliography:

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I. P. Alimarin was born September 11, 1903. From 1923 to 1953, he worked at the All-Union Scientific Research Institute of Mineral Raw Materials, and in 1949, at the U.S.S.R. Academy of Sciences Institute of Geochemistry and Analytical Chemistry. From 1929 to 1953, he also taught at the Moscow Institute of Fine Chemical Technology and became a professor there in 1950. In 1953 he was made a professor at Moscow University. He was elected to the U.S.S.R. Academy of Sciences as a Corresponding Member in 1953. He was awarded the Lenin Order, the Order of the Red Banner of Labor, and a medal.

Alimarin has concerned himself with analysis of minerals and ores, analytical chemistry of rare elements, microchemistry and radiochemical analysis.

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AMBARTSUMIAN, VIKTOR AMAZASPOVICH (Astrophysicist)

V. A. Ambartsumian was born September 18, 1908 in Tbilisi in the family of the distinguished Armenian philologist, writer and teacher, A. A. Ambartsumian. Ambartsumian received his secondary education at Tbilisi. He graduated in 1928 from Leningrad University, having published, as a student, more than ten papers on theoretical astrophysics and mathematics. He pursued graduate studies at Pulkovo Observatory under the Russian astrophysicist, A. A. Belopolskii (1854-1934). As a graduate student, he published papers dealing with solar physics, the physics of the stellar atmospheres and gaseous nebulae, and theoretical physics. He completed his graduate work in 1931, served as docent at Leningrad University, and in 1934 became a professor. Ambartsumian established the chair of Astrophysics at Leningrad University in 1934, and occupied it until 1946. He became Director of the Leningrad University Astronomical Observatory in 1938. He has been a pro-rector of science at the Leningrad University. From 1943 to 1947 he was Vice-President of the newly organized Academy of Sciences of the Armenian S.S.R. He was head of the research branch of the Leningrad University which was moved to Yelabuga during World War II. Since 1944 he has served as the Director of Yerevan Observatory. On his own initiative, he began and supervised the planning and construction of Byurakan Observatory in 1946, and became the Director. He has held the Chair of Astrophysics at Yerevan State University since 1947. He became a member of the Communist Party of the Soviet Union in 1940. In 1947, he was elected President of the Academy of Sciences of the Armenian S.S.R. From 1948 to 1955, he was Vice President of the International Astronomical Union. He was elected Academician of the Academy of Sciences of the U.S.S.R. in 1953, having been a Corresponding Member since 1939. He is a Deputy of the Supreme Soviet, since 1950, a member of the Central Committee of the Communist Party of Armenia, and President of the Armenian Society for the Propagation of Scientific and Political Knowledge. He has frequently participated in the work of international congresses, conferences, and meetings, and is an honorary member of corresponding member of academies of science and scientific societies of Austria, Britain, Belgium, Canada, France, Germany,

and the United States. Ambartsumian has twice received a State Prize, in 1946 and in 1950. He has also received two Orders of Lenin and two Orders of the Red Banner of Labor. In 1961 in Berkeley (USA) V. A. Ambartsumian was elected the President of the International Astronomical Union.

The early works of Ambartsumian dealt with the study of stellar physics and gaseous nebulae. He has given a mathematical interpretation of the complex physical processes involved in the luminescence of gaseous nebulae; he has demonstrated the important role of ' L_{α} ' radiation pressure in the nebulae, has developed a solution to the problem of atom accumulation in metastable states, and has elaborated a method for determining the electron temperature of the nebulae. The method he worked out for subdividing the ' L_c ' and ' L_{α} ' fields of radiation has enabled him to devise a theory of radiation equilibrium of planetary nebulae. This theory has been the foundation for all subsequent studies in this direction, the most valuable of which is the research conducted by his student, V. V. Sobolev. Ambartsumian has also devised methods of determining the masses of the nebulae and the gaseous envelopes surrounding the stars. These studies have stimulated further research on stellar physics and nebulae both in the Soviet Union and abroad. He was the first in the Soviet Union to have organized a course in Leningrad State University on theoretical astrophysics and is the leader of the Soviet school of theoretical astrophysics.

More recently Ambartsumian's interests extended to include stellar astronomy and cosmogony. A large number of his studies deal with the problem of the evolution of stellar systems. The idea underlying these studies is that of the existence of irregular forces in addition to regular forces in stellar systems. In the case of the double stars and star clusters, these irregular forces often play a decisive role in the process of their development. In order to solve this problem, he elaborated new methods of statistical mechanics of stellar systems and successfully applied them to dual stars and star clusters. The results of these investigations were incorporated by him into lectures during the 1930's at Leningrad University. These investigations and other results have affected previously existing theories of the age of the Galaxy and of the evolution of its component systems. Ambartsumian refuted the "Long Time Scale," according to which the age of the Galaxy was taken to be roughly 10^{13} years, while, according to him, the age of the Galaxy is in the order of 10^{10} years. During 1941-43, he personally conducted extensive research on the theory of light

diffusion in a turbid medium, which is of great importance in many questions of geophysics, physics, and astrophysics, and for which he received the State Prize in 1946. This traditionally well-known problem in science has generally been reduced to an integral equation for which the solution was found in a very cumbersome fashion by means of consecutive approximations. Ambartsumian applied an entirely new method to the solution of this problem: reducing it to simple functional equations, he obtained an exact solution to it. These equations have become known as "Ambartsumian's Functional Equations." Also in the forties, he completed a cycle of studies dealing with the problem of the structure of the Galaxy which had been partially carried out during his stay in Leningrad. The structure of the Galaxy (the basic problem of modern Astronomy) became a more complex question in the 1930's with the discovery of dark, light-absorbing matter in the interstellar space. In studying (along with Sh. G. Gordeladze) the distribution of hot stars and of diffuse nebulae, Ambartsumian revealed the patchy structure of the dark matter, and drew the conclusion that interstellar absorption is conditioned by the total mass of dark clouds, in the form of separate, obscure nebulae, not a continuous medium, as had been previously believed. On the basis of the patchy structure of the dark matter, he elaborated a mathematical theory of the fluctuations in the distribution of the stars, of the brightness of the Milky Way, and of the extragalactic nebulae which was subsequently developed in the work of Ambartsumian's pupils and by a number of foreign scientists (such as Chandrasekar, Munch). His work also dealt with the relationship between the luminosity of interstellar matter in space and the neighboring stars, a method to calculate the mass ejected by Nova (the order of magnitude of only one part in a thousand of the mass of the sun), a theory on radiation equilibrium in planetary nebulae, and a theory for determining the space velocity distribution of stars from their radial velocities.

A new development of Ambartsumian is concerned with the origins and development of celestial bodies. An analysis and synthesis of observation material accumulated enabled him in 1947 to discover the existence in the Galaxy of a new type of stellar systems which he designated as stellar associations. These he found to be subject to break-up through the dropping out of individual stars, and to be of comparatively recent origin (State Prize, 1950). He established the continuous process of star formation at the present stage in the development of the Galaxy. This was a refutation of the concept held of the

simultaneous origin on the stars in the Galaxy. This work provided a foundation for research in astronomy into the evolution of stars and stellar systems by observation of their development. The theoretical prediction (in 1947-49) by Ambartsumian concerning the dynamic instability of stellar associations and their expansion was confirmed as a result of the analysis of movements of stars carried out in Leyden and Byurakan.

Ambartsumian's finding of the group character of the emergence of stars has permitted clearer study of the physical nature and cosmogonic role of double and multiple stars, star chains and clusters, and gaseous nebulae. It has also resulted in work by Ambartsumian on continuous emission, another aspect of the physical nature of the members of stellar associations. Continuous emission is the excess radiation in a total spectrum observed in stars of the T Tauri and UV Ceti type and also in comet-like nebulae. By synthesis and analysis of uncoordinated data, Ambartsumian established the non-thermal character of continuous emission. This aroused great interest in the origin of this entirely new phenomenon. At the present time, extensive study of continuous emission is under way both at the Byurakan Observatory and at a number of foreign observatories (Lick, Tonantzintla).

In recent years, Ambartsumian began research on the galaxies and on the systems constituted by them. One result of his work is the conclusion (based on the group character of the formation of galaxies) that galaxies form as multiple systems and clusters having in many cases positive energy, that is, constituting systems under disintegration. He interprets radio-galaxies as the result of a process of division--the formation of galaxies counterbalancing the hypothesis of collision of galaxies. The blue galaxies detected by him, a particular kind of dwarf galaxies, enrich our conceptions of the nature of galaxies and may furnish much valuable material for studying the evolution of galaxies. The very important role of nuclei of galaxies in their evolution was shown. In particular it was concluded that the nuclei of galaxies display a number of forms of cosmogonic activity.

In 1960 the composition of degenerate gas with nuclear density and greater was studied. It was shown that with increasing density, different hyperons successively appear and their number in the gas increases. They should be stable due to the Pauli principle.

Then it is proved that in the case of the degenerate super-dense gas the configuration of gravitational equilibrium of

cosmic mass should consist of a hyperon nucleus, neutron layer and outer envelope of usual composition (electrons, protons, and composite nuclei).

The internal structure of equilibrium configurations of stellar masses, with densities of the order of the atomic nucleus and higher, was studied. It was shown that the space metrics inside the configuration essentially deviates from the Euclidian type.

As of 1961, Ambartsumian was a member of the Presidium U.S.S.R. Academy of Sciences, and Chairman of the Commission on Astrophysics of the U.S.S.R. Academy of Sciences.

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AMIRASLANOV, ALI AGAMALY OGLY (Deceased, October 16, 1962.)

A. A. Amiraslanov was born December 1900. Upon graduating from the Moscow Mining Academy in 1930, he worked at the All-Union Institute of Mineral Raw Materials and Scientific Geological Gold Survey Institute. In 1939-1947 he was a chief engineer, in 1948-1953 he was Director, and in 1954 he became

chief geologist of the U.S.S.R. Main Geological Survey Directorate of the Ministry of Non-Ferrous Metals. He taught at the Moscow Geological Survey Institute from 1931 to 1955, and in 1950 became a professor at that institute. He was awarded two orders as well as medals.

Amiraslanov's major works deal with non-ferrous and rare metals deposits (chiefly copper, lead and zinc).

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ANDREEV, NIKOLAI NIKOLAEVICH (Acoustical Physicist)

N. N. Andreev was born June 28, 1881. In 1909 he graduated from the University of Basel. From 1917 to 1940 he taught and directed research in a number of universities and research institutions. He worked at the Physics Institute of the U.S.S.R. Academy of Sciences from 1940 to 1954. Beginning in 1945, Andreev has worked at the Acoustics Institute of the U.S.S.R. Academy of Sciences. He was elected Corresponding Member of the U.S.S.R. Academy of Sciences in 1933, and in 1953 Academician.

Andreev's numerous scientific contributions are mainly in the field of physical and technical acoustics and in the theory of vibrations. They are concerned with dispersion problems of acoustic waves. Andreev established the theory of the diffusion of sound in moving media; he investigated noise caused by airplane motors and propellers, problems of architectural acoustics, and wave acoustics of finite amplitude. Other important contributions of Andreev are in piezo-electricity, in the theory of the telephone, and in musical acoustics. He is the author and editor of many popularized scientific articles and

books. He is the founder of the School of Soviet Acoustical Engineers.

As of 1961, Andreev was Chairman of the Commission on Acoustics of the USSR Academy of Sciences.

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ANDRIANOV, KUZ'MA ANDRIANOVICH (Chemist)

K. A. Andrianov was born December 28, 1904. After graduating in 1930 from Moscow University, he worked at the All-Union Electrotechnical Institute. In 1930-41, he taught at the Moscow Chemico-Technological Institute. Then, in 1941, he went to teach at the Moscow Institute of Energetics and in 1946 was made professor there. In 1954 he began work at the Institute of Elemental Organic Compounds. Andrianov has been a member of the Communist Party of the Soviet Union since 1949. In 1953, he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences. In 1943, 1946, 1950, he received Stalin Prizes.

The main works of Andrianov are devoted to synthesis and technology of high molecular compounds, particularly of silicon-organic polymers. In 1937 he synthesized "polyorganosiloxanes," and in 1947 he worked out the method of obtaining new polymers—"polyorganometallosiloxanes." Under his leadership

work was carried out on the synthesis of heat-resistant, electro-insulating silicon-organic polymers.

In September 1959, Andrianov visited the United States to attend the American Chemical Society meetings, Atlantic City, New Jersey.

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ANITSCHKOW (ANICHKOV), NIKOLAI NIKOLAEVICH (Pathomorphologist)

N. N. Anitschkow was born November 3, 1885. In 1909 he graduated from the Military Medical Academy, where from 1920 to 1946 he was a professor. Also in 1920 he began working at the Institute of Experimental Medicine at the U.S.S.R. Academy of Medical Sciences. From 1946 to 1953 he was President of the U.S.S.R. Academy of Medical Sciences. He has been an

Academician of the U.S.S.R. Academy of Sciences since 1939, and since 1944 an active member of the U.S.S.R. Academy of Medical Sciences. Anitschkow was a Deputy to the Supreme Soviet of the U.S.S.R. second convocation. In 1942 he received a State Prize and in 1952 the I. I. Mechnikov medal from the U.S.S.R. Academy of Sciences.

Anitschkow is the author of a large number of publications on various problems of experimental pathology and pathomorphology, particularly on the pathology of blood vessels. He was first to offer a well organized study of atherosclerosis. Closely related to this field are his investigations on lipid exchange. He has also been concerned with the morphology and functions of the reticulo-endothelial system and its part in deposition of different particles from blood and lymph. In the works concerning the pathology of contagious diseases Anitschkow threw light on the autoinfection in the development of contagious diseases.

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ARBUZOV, ALEKSANDR ERMININGEL'DOVICH (Organic Chemist)

A. E. Arbuzov was born August 30, 1877. He graduated from the Kazan University in 1900 and from 1911 to 1930 was a professor there. He had been a student of A. M. Zaitsev (1841-1910, an outstanding organic chemist and Corresponding Member of the Petersburg Academy of Sciences). In 1930 he became a professor at the Kazan Chemical-Technological Institute. Arbuzov was elected a Corresponding Member of

the U.S.S.R. Academy of Sciences in 1932 and an Academician in 1942 and was made President, in 1945, of the Kazan' Branch of the U.S.S.R. Academy of Sciences. He was a delegate from R.S.F.S.R. to the Supreme Soviet of the U.S.S.R. for the second through fifth meetings and again as of March 18, 1962. In 1957 he was a Hero of Socialist Labor. Twice, 1943 and 1947, he has won Stalin Prizes.

Arbuzov's studies are concerned with phosphorous-organic compounds. In his master's degree thesis "Structure of Phosphorous Acid and its Derivatives" (1905), Arbuzov determined the structure of phosphorous acid and its esters. He found a catalytic rearrangement reaction for intermediate esters of this acid, which is called the Arbuzov Rearrangement. This isomerization is the widely used method for synthesizing alkylphosphenic acids and similar compounds. In his doctor's degree thesis "Catalysis in Conversion of Some Phosphorous Compounds" (1914), he extended his theory to cover phenylphosphenic and other esters. He identified the forces which accelerate the catalytic isomerization processes, with the forces which affect the rates of conventional chemical reactions. Together with his pupil A. A. Dunin, Arbuzov synthesized phosphonacetic ester and its homologs. The sodium and potassium derivatives of these esters can be used in syntheses similar to the acetoacetic and malonic ester. This synthesis and investigation is related to Arbuzov's work on tautomerism of dialkyl esters of phosphorous acid and on the reactions of their metal derivatives. During the investigation of these compounds Arbuzov, in collaboration with B. A. Arbuzov, found a new method of obtaining free radicals of the triarylmethyl series. Arbuzov has also studied the tapping and flow of soft gums from conifers. He found a high pressure (2 to 3 atmospheres) in the gum ducts of these plants and developed a technique for collecting gums without any loss of volatile substances. This technique aided the rapid growth of the resin industry of the U.S.S.R. Arbuzov wrote a book on the history of chemistry which showed the contributions of N. N. Zenin, A. M. Butlerov, the Kazan' school as a whole, M. V. Lomonosov, D. I. Mendeleev, S. V. Lebedev and others. He also studied extensively the history of free radicals, phosphorous-organic compounds, and catalysis.

As of 1961 he was Chairman of the Commission on the History of Chemistry, and Member of the Presidium of the U.S.S.R. Academy of Sciences.

In 1960 Arbuzov was appointed Director of the Arbuzov Institute of Chemistry of the Kazan' Branch of the U.S.S.R. Academy of Sciences.

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ARBUZOV, BORIS ALEKSANDROVICH (Organic Chemist)

B. A. Arbuzov was born October 22, 1903. He is the son and pupil of A. E. Arbuzov (an outstanding organic chemist and Academician). In 1926 he graduated from Kazan' Institute of Agriculture and Forestry. He worked at the Kazan' Chemico-Technological Institute from 1930 to 1938 and was made a professor there in 1935. In 1938 he became a professor at the Kazan' University. Beginning in 1945, he has also worked at the Kazan' Branch of the U.S.S.R. Academy of Sciences. He was elected in 1943 a Corresponding Member of the U.S.S.R. Academy of Sciences and in 1953 an Academician. The U.S.S.R. Academy of Sciences awarded Arbuzov the D. I. Mendeleev Prize in 1949, and in 1951, he won a Stalin Prize.

Arbuzov's research has been in the field of terpenes, diene compounds and application of physical methods for the study of the composition of organic compounds. Arbuzov discovered the isomerization of α -pinene to allocymene and of α -oxypinene to compholene aldehyde. By the method of diene synthesis he obtained a number of diene products.

As of 1961, B. A. Arbuzov was Director of the Institute of Organic Chemistry of the U.S.S.R. Academy of Sciences Kazan' Branch.

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ARTOBOLVSKII, IVAN IVANOVICH (Mechanical Engineer)

I. I. Artobolevskii was born September 26, 1905. In 1926 he graduated from the Faculty of Agricultural Engineering of K. A. Timiryazev's Agricultural Academy. He received the degree of Doctor of Technical Sciences in 1936. In 1927 to 1929 he taught in the Moscow Electromechanical Institute; and in 1929 to 1932 he taught in the Moscow Chemico-Technological Institute where, in 1932, he was made a professor. In 1932 he became a professor in the Moscow Institute of Chemical Engineering of the N. E. Zhukovskii Air Force Academy and in Moscow University. He was appointed professor at the Moscow Aviation Institute in 1941. Beginning in 1937, he directed the Laboratory of Dynamic Machines of the Institute of Machine Control of the U.S.S.R. Academy of Sciences. From 1942 to 1954, Artobolevskii was Acting Secretary of the Department of Technical Sciences of the U.S.S.R. Academy of Sciences. He was Chairman, 1945-1954, of the Department of Mechanical Engineers. In 1939 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences, and in 1946 an Academician. Artobolevskii was an Honored Scientist of the R.S.F.S.R. in 1945. In 1946, the Academy of Sciences awarded him, jointly with V. V. Dobrovolskii and Z. Sh. Blokh, the P. L. Chebyshev Prize for the treatises, A Synthesis of Mechanisms (1944) and The Scientific Legacy of Chebyshev (1945 with N. I. Levitskii). He is also active in public affairs and in 1947 was made Acting Chairman of the All-Union Department for Dissemination of Political and Scientific Knowledge.

Artobolevskii's field of activity is the theory of machines and mechanisms. He worked out a classification of three

dimensional mechanisms and developed new methods for their kinematic analysis. He wrote the first Russian monograph on spatial mechanisms (The Theory of Spatial Mechanisms, 1937). He developed new methods for kinematic analysis of complicated multi-element mechanisms (1939). With a group of Soviet scientists, he originated methods for the study of modern automatic machines, especially in the food, printing, and machine-tool industries. He has been working on the theoretical and experimental methods for studying the dynamics of working machines.

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ARTSIMOVICH, LEV ANDREEVICH (Nuclear Physicist)

L. A. Artsimovich, son of a Moscow professor of statistics, was born February 25, 1909. He graduated at an early age from the Belorussian State University; and at the age of 21, he began to work in the Leningrad Physico-Technical Institute where he

was a student of A. F. Ioffe (1880-1960, internationally known physicist), the Director. He also taught at the Leningrad Polytechnical Institute and at Leningrad University. In the postwar years, he gave courses on atomic and nuclear physics, first at the Moscow Engineering and Physics Institute, then more recently at the Moscow University. In 1946 Artsimovich was elected a Corresponding Member and in 1954 an Academician of the U.S.S.R. Academy of Sciences. He was awarded a Stalin Prize in 1953, and in 1958 a Lenin Prize. He has also received a number of orders of the Soviet Union from the government.

Artsimovich's first researches were in x-ray optics, particularly on the problem of complete x-ray reflection. This investigation was carried out together with A. I. Alikhanov. In 1934-1935 Artsimovich, together with I. V. Kurchatov and others, studied the properties of the neutron and in particular the proton capture by a neutron. This study showed that the capture cross section of slow neutrons by protons is very great. In 1936, Artsimovich, with A. I. Alikhanov and A. I. Alikhanyan, examined the conclusions of the American physicist Shenkland on the possibility of the violation of the laws of conservation in the Compton Effect. An original experiment was set up which confirmed the validity of the laws of conservation in the electron and positron annihilation and refuted the ideas of Shenkland.

The main subject of his research at the Leningrad Physico-Technical Institute has been the study of the processes of the interaction of fast electrons with matter. In the mid thirties experimental data on bremsstrahlung and the angular distribution of electrons diverged from accepted theory by two orders of magnitude. Artsimovich did extensive experiments on the dependence of the bremsstrahlung intensity and the total energy losses on the energy of incident electrons. A careful analysis of the results showed that the quantum-mechanical theory of the passage of fast electrons through matter agrees with experimental data within the accuracy of the experiment.

During the war years (1943-46) Artsimovich was concerned with electron optics and the theory of chromatic aberrations of the electron optical system; he carried out theoretical and experimental research in the field of electron optical converters. In 1945, Artsimovich and I. Ya. Pomeranchuk did theoretical research on the role of radiation losses in the betatron. This work permitted the establishment of the maximum energy achieved by this type of electron acceleration. Artsimovich was one of a group who developed an electromagnetic method of isotope separation. From currents then available in the

mass spectrometer laboratory (of the order of 10^{-10} amperes), it was necessary to use currents of the order of an ampere. In reaching a solution to this problem, Artsimovich carried out a careful analysis of the problems of the aberrationless focussing of ion beams in axially-symmetric magnetic fields. He designed the optics of the ion source. As a result of this work, the Soviet physicists developed a successful production of separated isotopes. In the beginning of the fifties, Artsimovich began his work on a controlled thermonuclear reaction. The group of physicists under Artsimovich began the study of high current pulse discharge in evacuated deuterium. In the course of these experiments, the group succeeded in obtaining for a short time a highly ionized plasma of a million degrees. In 1952, this group of scientific workers discovered that a powerful pulse discharge in deuterium at low pressure is a source of neutrons and x-ray radiation of short wave length. Further studies showed that the gas-discharge plasma, compressed in the presence of the longitudinal magnetic pole possessed paramagnetic properties. It was also shown that neutrons originate, not as a result of the thermonuclear reaction, but as a result of a specific acceleration process. The work of studying the means of obtaining a controlled thermonuclear reaction is now being conducted extensively under Artsimovich's direction. The report of L. A. Artsimovich at the Second World Conference on the Peaceful Use of Atomic Energy in Geneva in September, 1958, is a survey of the studies of Soviet physicists in this field.

Artsimovich has participated in the Pugwash Conferences. As of 1961, he was Secretary of the Physical Mathematical Sciences Department of the U.S.S.R. Academy of Sciences.

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A. I. Alikhanov. Uspekhi Fiz. Nauk, #2, 367-697, Feb. 1959.

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ASRATYAN, EZRAS ACRATOVICH (Physiologist)

E. A. Asratyan was born May 31, 1903. A pupil of I. P. Pavlov, he graduated from the Agricultural Institute in 1926 and from the University of Yerevan Medical School in 1930. From 1930 to 1938, he worked in the Physiological Institute, Academy of Sciences. From 1935 to 1941, he worked at the Bekhterov Cerebral Institute and from 1936 to 1941, at the Leningrad Institute of Pedagogy where he became a professor in 1938. From 1950-52, he was Director of the Institute of Higher Neuroactivity. In 1944 he was appointed Chief of the Academy of Sciences Physiological Laboratory, and later became Director of the Institute. He has been professor at the Second Medical Institute since 1950. He has been an Academician of the Armenian Academy of Sciences since 1947, a member of the Communist Party of the Soviet Union since 1929, and was elected to the U.S.S.R. Academy of Sciences as a Corresponding Member in 1939. As of 1961, he was Director of the Institute of Neurophysiology of the U.S.S.R. Academy of Sciences. In 1962 he was awarded the Pavlov Gold Medal for studies in Pavlovian physiology.

Using Pavlov's teachings of the evolutionary theory of the adaptability of the nervous system, Asratyan explained the regenerating aspects in a damaged organism. He and his collaborators proved that in the regeneration of lost and broken functions of the damaged organism, a deciding role is played by the cortex of the large hemispheres of the cephalic brain. He also demonstrated the pathological condition of the organism, produced by organic trauma (traumatic shock, paralysis, incisions) and offered a new soporific method for treatment of these conditions. An anti-shock liquid developed by Asratyan was used in the front lines of the second World War. He, with collaborators, has been working on the problems of cortical presentation of unconditioned reflexes, the transfer into conditioned reflex activity, and the relationship of conditional ties to various functional properties.

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ASTAUROV, BORIS LVOVICH (Biologist)

B. L. Astaurov was born October 27, 1904. He graduated from the University of Moscow in 1927. He worked in the Moscow Branch of the Academy of Sciences Commission for the Study of Natural Productive Powers from 1926 to 1930. From 1930 to 1935, he was at the Middle East Institute of Sericulture in Tashkent. Since 1935, he has been an associate at the Institute of Experimental Biology (now the A. N. Severtsov Institute of Animal Morphology). In 1955, he was laboratory Chief of Experimental Embryology. He became a Corresponding Member of the U.S.S.R. Academy of Sciences in 1958.

Astaurov's basic works deal with the theory and practice in the heredity of the mulberry silkworm. He has worked out methods of thermal artificial parthenoses and found a way of obtaining complete experimental androgens.

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A. A. Avakyan was born July 21, 1907. In 1946 he became a Corresponding Member of the U.S.S.R. Academy of Sciences, and in 1948 a member of the Lenin All-Union Academy of Agriculture. He was awarded a Stalin Prize in 1941.

The studies of Avakyan deal with problems of developing vegetation. He was very active in the study of hereditary changes in plants, vegetative hybridization, fertilization, vegetative and sexual reproduction of plants. He has conducted investigations in the biology and culture of branchy-eared wheat.

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AVSYUK, GRIGORII ALEKSANDROVICH (Glaciologist)

G. A. Avsyuk was born in 1906. In 1930 he graduated from the Moscow Geodesic Institute. From 1928-37 he worked at the cartographic publishing house of the Ministry of Internal Affairs (NKVD), and later at the Main Northern Sea Route Administration. In 1937, he began work at the U.S.S.R. Academy of Sciences Institute of Geography. In 1957, he became deputy academician-secretary of the U.S.S.R. Academy of Sciences division of geolo-geographic sciences. Since 1947 he has been a member of the Communist Party of the Soviet Union. He was elected, in 1960, a Corresponding Member of the U.S.S.R. Academy of Sciences.

Avsyuk visited the United States in February 1958 to attend the International Arctic Sea Ice Conference in Easton, Maryland.

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BAKULEV, ALEKSANDR NIKOLAEVICH (Surgeon)

A. N. Bakulev was born December 7, 1890. He graduated from the Medical Faculty of Saratov University in 1915 after which he served for three years as a regimental physician. From 1919 to 1926 Bakulev was at the hospital surgical clinic of Saratov University, first as a hospital surgeon and later as a clinical assistant. He worked, in 1926 to 1943, at the Surgical Clinical Faculty of the Second Moscow Medical Institute where

he became a professor in 1935. In 1943 he was head of the Surgical Clinical Faculty of the Pediatric Faculty at the Second Moscow Medical Institute, and as of 1962 has been Chairman of the Surgical Clinical Faculty of the Therapeutic Faculty.

During World War II he was a front-line surgeon and subsequently chief surgeon of the Moscow Evacuation Hospital and chief of the surgical division of the Kremlin Therapeutico-Sanitation Administration Hospital. Bakulev was elected Corresponding Member of the U.S.S.R. Academy of Medical Sciences in 1947, and in 1948 Active Member. In 1958 he was made Academician of the U.S.S.R. Academy of Sciences. In 1954 and in 1957, he was elected President of the U.S.S.R. Academy of Medical Sciences. He was a Deputy to the Supreme Soviet of the U.S.S.R., third to fifth convocations. Bakulev was an Honored Scientist of the R.S.F.S.R. in 1947. He was awarded a State Prize in 1949, and in 1957, and two other times Lenin Prizes. In 1960 he was made a Hero of Socialist Labor.

Bakulev conducted detailed studies on kidney function during ureter transplantation and worked in the field of bone surgery, tumors of the posterior mediastinum, and lungs. At the Moscow Clinic, he studied encephalography and ventriculography and was one of the first to introduce these methods in clinical research in the U.S.S.R. He has also proposed the treatment of brain abscesses by puncture (his doctoral dissertation).

During the second World War he studied the treatment of firearms wounds, including spinal cord wounds and cranium damage with exposed tissue where he proposed a closed suture method.

After the war Bakulev turned to thoracic surgery problems in lung and heart operations, and in 1948 performed the first operation in the U.S.S.R. on a congenital defective heart.

In 1956 Bakulev initiated the organization of the Institute of Thoracic Surgery in Moscow, which in 1960 was reorganized into the U.S.S.R. Academy of Medical Sciences Institute of Cardiovascular Surgery. He organized scientific research in acquired and congenital diseases of the heart and main vessels, developed surgical methods for their treatment, and incorporated these methods into medical practice (Stalin Prize 1957).

Other activities of Bakulev include Chairmanship of the Scientific Coordination Council, Academy of Medical Sciences U.S.S.R. and Membership in the Institute of Chest Surgery, Moscow, Academy of Medical Sciences U.S.S.R.

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BALANDIN, ALEKSEI ALEKSANDROVICH (Organic Chemist)

A. A. Balandin was born December 8, 1898. In 1923 he graduated from Moscow University and worked there from 1927, becoming a professor in 1934. He organized the first laboratory course in the Department of Organic Catalysis at Moscow State University and in 1959 became Director of the Department. Balandin is the Chief of the Laboratory of the Kinetics of Catalytic Organic Reactions and the N. D. Zelinskii Laboratory of the Institute of Organic Chemistry of the Academy of Sciences of the U.S.S.R. He is a student of N. D. Zelinskii (1861-1953, an outstanding organic chemist specializing in catalysis and stereoisomerism.) Balandin has been active in scientific organizations; he is the Chairman of the Council for the Problem "Scientific Bases of Selecting Catalysts" in the Chemical Sciences Section of the U.S.S.R. Academy of Sciences. This

Council coordinates all work on catalysts in the U.S.S.R. In 1949 Balandin became a member of the Communist Party of the Soviet Union. He was elected Corresponding Member of the U.S.S.R. Academy of Sciences in 1943 and Academician in 1946. He has received the Order of Lenin, two Orders of the Red Banner of Labor, and a Stalin Prize. For his research in synthetic rubber he was awarded the Mendeleev and Lebedev Prizes.

Balandin formulated the so-called multiplet theory of catalysis, attempting to establish a relationship between the geometry of the atomic groups, which change directly in catalysis during a reaction, and the geometry of active centers on the surface of the catalyst. On the basis of his theory and classification, Balandin studied the dehydrogenation of paraffins, olefins, alkylbenzenes, and those products of dehydrogenation which are important for the industrial synthesis of monomers, for obtaining synthetic rubber and other high-polymers.

Balandin is a Soviet pioneer in the study of the kinetics of organic catalytic reactions. He deduced the general kinetic equation for monomolecular reactions in a flow system. Balandin and his associates carried out extensive research on the kinetics of the dehydrogenation of hydrocarbons, the dehydrogenation and dehydration of alcohols, and the dehydrogenation of amines. Using the method of tagged atoms, the kinetics and mechanism of the dehydration of ethyl alcohol on aluminum oxide and the kinetics of the dehydrogenation of butane and butylene were studied. The reactions of catalytic production of styrene and its homologs were investigated in detail. This study is of great importance for synthetic rubber and plastics. Balandin formulated the theory of the hydrogenation of unsaturated compounds. The multiplet theory proved useful in the studies of Balandin and his co-workers on the hydrogenation of polysaccharides to obtain polyatomic alcohols. It received considerable development with the discovery of the laws for the selection of catalysts. The following are members of his scientific school: Ye. A. Agronomov, O. K. Bogdanova, A. Kh. Bork, I. I. Brusov, V. E. Vasserberg, N. A. Vasiunina, P. G. Ivanov, G. V. Isagulyants, Ye. I. Klabunovskii, S. L. Kiperman, A. I. Kukina, G. M. Marukyan, V. V. Patrikeev, S. Ye. Payk, A. P. Rudenko, T. A. Slovokhotova, N. P. Sokolova, A. A. Tolstopyatova, L. Kh. Freidlin, A. P. Shcheglova, and others.

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BARANSKII, NIKOLAI NIKOLAEVICH (Geographer)

N. N. Baranskii was born July 26, 1881. In 1901, he was expelled from Tomsk University for participating in a student political strike. Since that time, he became a professional revolutionary. In the fall of 1905, he was chosen as a delegate of the Siberian Bolsheviks to the Irkutsk Conference of the Siberian Social Democratic Union. He graduated from the Moscow Commercial Institute in 1914. In 1915, he was a board member of the People's Commissars of Worker-Peasant Inspection. In 1918, he began to study economic geography which arose in opposition to the then predominant statistical branch method. He has been awarded the title Honored Scientist of the R.S.F.S.R. in 1943. In 1939 he was elected to the U.S.S.R. Academy of Sciences as a Corresponding Member. He is a member of the Communist Party of the Soviet Union.

Baranskii considers the main object of investigations in economic geography to be not the branches of economics but economic regions. In economic-geographic studies of various countries he stresses the internal space difference; he placed

stress on the economic division into districts and the characteristics of these districts. In this connection, he placed great importance on economic maps and field economic-geographic investigation of territories. Baranskii compiled a series of textbooks on economic geography of the U.S.S.R. (among them, a standard textbook for the eighth grade which until 1955 had 16 editions). He established a series of university courses. He is the author of questions of methodology of economic geography and cartography.

In March 1962, Baranskii was awarded the Hero of Socialist Labor.

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BARMIN, VLADIMIR PAVLOVICH (Mechanical Engineer)

V. P. Barmin was born March 17, 1909. After graduating from Moscow Technological College in 1930, he worked at the plant "Compressor" where in 1940-1946 he was chief designer. Beginning in 1931, he also taught at Moscow Technological College. He has been a member of the Communist Party of the Soviet Union since 1944. In 1958 Barmin was elected a Corresponding Member of the U.S.S.R. Academy of Sciences. In 1943 he received a Stalin Prize.

Barmin has been interested in mechanics, in particular construction of compressors.

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BASHKIROV, ANDREI NIKOLAEVICH (Chemist)

A. N. Bashkirov was born December 22, 1903. In 1929 he graduated from the Moscow Chemico-Technological Institute. From 1934 to 1938, he worked at the All-Union Scientific Research Institute of Gas and Artificial Liquid Fuel and at its Siberian branch (Novosibirsk). He was at the U.S.S.R. Academy of Sciences Institute of Mineral Fuels from 1939 until 1947 when he began work at the Institute of Petroleum of the U.S.S.R. Academy of Sciences. In 1943, Bashkirov became Chairman of a Department at the Moscow Institute of Fine Chemical Technology. He has been since 1958 a Corresponding Member of the U.S.S.R. Academy of Sciences.

Bashkirov worked on desulfurization of gases and petroleum products and on thermal processing of coal. His main works are devoted to catalytic synthesis of hydrocarbons, alcohols, and amines from oxides of carbon and hydrogen; he investigated the direct oxidation of hydrocarbons, and he worked out an industrial process for higher aliphatic alcohols by direct oxidation of hydrocarbons.

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BASOV, NIKOLAI GENNADIEVICH (Radio Physicist)

N. G. Basov was born in 1922. He graduated from Moscow Engineering and Physics Institute in 1950, and in 1957 he earned the degree of Doctor of Physico-Mathematical Sciences. In 1948 he began work at the Lebedev Institute of Physics, and he has been Deputy Scientific Director of this Institute. As of 1962, he was still a member of the Lebedev Institute of Physics. Basov has been a member of the Communist Party of the Soviet Union since 1958. In 1962 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences. He visited the United States in September 1959 to attend the International Conference on Quantum Electronics-Resonance Phenomena, Bloomingburg, New York. In March 1962 he attended the annual meeting of the Optical Society of America in Washington, D. C.

Basov is conducting research in quantum radio physics. With Corresponding Member A. M. Prokhorov he has developed quantum optical generators.

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BELOUSOV, VLADIMIR VLADIMIROVICH (Geologist)

V. V. Belousov was born October 30, 1907. In 1943 he became Chief of the Laboratory on Theoretical Geotectonics and on Geodynamics of the USSR Academy of Sciences Institute of Terrestrial Geophysics. Since 1953, he has been a professor at Moscow University. In 1953, he was elected to the U.S.S.R. Academy of Sciences as a Corresponding Member. In 1960 he was elected President of the International Union of Geodesy and Geophysics for the term 1960-1963. As of 1961, Belousov was Chairman of the Soviet Geophysical Committee.

Belousov has worked in tectonics and tectono-physics. He developed new methods of studying history of oscillatory motion of the earth's crust and elucidated the history of geological development in the Greater Caucasus and the Russian platform. In 1942 he advanced, and in 1951 and 1960 he developed the hypothesis that a prolonged process of differentiation of the earth's mass with a gradual division according to its density took place as a main internal process influencing the tectonic development of the earth's crust.

Belousov visited the United States to attend the American Geological Society meetings in St. Louis, Missouri, in November 1958, and the Electric Power Delegation at Westinghouse Fermi Plant in October 1959.

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BELOV, NIKOLAI VASIL'EVICH (Crystallographer)

N. V. Belov was born December 14, 1891. He graduated from the Petrograd Polytechnical Institute in 1921. In 1938 he joined the staff of the Crystallography Institute of the U.S.S.R. Academy of Sciences. He was made professor in 1946 at Gorkii University and in 1953 at Moscow University. Belov became in 1954 a member of the Executive Committee and in 1957 vice-president of the International Crystallographic Association. He helped to organize the Leningrad and the Moscow Crystallographic Museums. In 1946 Belov was elected a Corresponding Member of the U.S.S.R. Academy of Sciences and in 1953 an Academician. He received a Stalin Prize in 1952.

Belov's scientific work is in geometrical crystallography, x-ray structure work, the practical application of symmetry groups and Fourier's analysis to crystals. He developed a theory of close packing of atoms in a crystal. As a result of this theory a number of structures were established such as epidote, wollastonite. Belov has trained many Soviet workers in x-ray crystallography.

Belov visited the United States in January 1960 to attend a Crystallography Conference at Brooklyn Polytechnical Institute.

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BELOZERSKII, ANDREI NIKOLAEVICH (Plant Biochemistry)

A. N. Belozerskii was born August 29, 1905. He graduated in 1927 from the Central Asiatic University. In 1930 he worked at Moscow University and in 1946 was made professor. He was also working in 1946 at the Institute of Biochemistry of the U.S.S.R. Academy of Sciences. In 1958 he became a Corresponding Member of the U.S.S.R. Academy of Sciences, and in June 1962, an Academician.

Belozerskii's investigations are devoted to the chemistry and biochemistry of albumen and chiefly of nucleic acids. He

established the presence of desoxyribonucleic acid in higher and lower plants and noted the relationship of the change of nucleic acids in ontogenesis of plants. He showed a specific characteristic of desoxyribonucleic acid in bacteria.

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BELYAYEV, ANATOLII IVANOVICH (Metallurgist)

A. I. Belyayev was born in 1906. In 1931 he graduated from the Kalinin Moscow Institute of Non-Ferrous Metals and Gold. In 1931-34, he was a plant engineer at Zadorozh'e, and chief engineer of the Main Aluminum Plant in Moscow. He was, 1934-37, scientific Director of the Moscow branch of the All-Union Aluminum Institute. In 1941 he began work at the Institute of Non-Ferrous Metals and Gold. He was elected, in 1960, to the U.S.S.R. Academy of Sciences as a Corresponding Member.

Belyayev's main works deal with the electrochemistry of alloy salts and the electrometallurgy of light metals.

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BERG, AKSEL IVANOVICH (Radioengineer)

A. I. Berg was born November 10, 1893. He was a submarine mate during World War I and a submarine Commander in the Civil War. After graduating from the Naval Academy and the Naval Engineering School of Leningrad in 1925, he taught and worked at military and naval institutions. In 1926 he joined the staff of the Electro-Technical Institute. He also planned and organized research when he was Chairman of the All-Union Advisory Committee on Radiophysics and Radioengineering of the U.S.S.R. Academy of Sciences. Berg was Chairman of the Board of Directors of the Popov All-Union Technological Society of Radio Technology and Related Sciences. He has been a member of the Communist Party of the Soviet Union since 1944. In 1943 he was elected Corresponding Member of the U.S.S.R.

Academy of Sciences and in 1946 Academician. He was a recipient in 1951 of the A. S. Popov gold medal.

Berg's scientific work deals with: designing and developing of tube oscillators; stabilizing frequency; studying amplification and frequency control of tube oscillators. He formulated and worked out a number of important problems (grid detection; the computation of an oscillator with a distorted pulse form of the anode current) which contributed to the development of radio engineering. Berg is the author of many textbooks in the field of radioengineering.

As of 1961, Berg was chairman of the Cybernetics Council of the U.S.S.R. Academy of Sciences.

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Biography:

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BERITASHVILI (BERITOFF), IVAN S. (Physiologist)

I. S. Beritashvili was born December 29, 1884. In 1910 he graduated from Petersburg University. He became a professor in 1919 at Tbilisi University. In 1935 he was appointed head of the Institute of Physiology at the University. This Institute became a part of the Georgian S.S.R. Academy of Sciences in 1941, and Beritashvili was the Director until 1952. Until recently he

has been Chief of scientific work there. He was elected Academician of the U.S.S.R. Academy of Sciences in 1939 and in 1941 of the Georgian S.S.R. Academy of Sciences. Since 1944 he has been a member of the Academy of Medical Sciences. In 1938 Beritashvili was awarded the Prize of I. P. Pavlov and in 1941 a Stalin Prize. In 1959 Beritashvili was elected an honorary member of the New York Academy of Sciences.

The main work of Beritashvili is devoted to muscle physiology and the physiology of the nervous systems, particularly the central nervous system. He conducted investigations on the following: the contracting power of various muscles, the relationship of processes of excitation and contraction, functional differences of nervous and non-nervous sections of the muscle, plastic and elastic properties of various muscles, functional properties of peripheral nerves, velocity of distribution of excitation in the central nervous system, its coordinating action, the variability of innate reflex actions, the phenomenon of general inhibition of the central nervous system, the higher forms of behavior in vertebrates, the neuro-psychic processes and their behavioural role, the conditions of formation of temporary connections, the role of receptors in spatial orientation in vertebrates and in man, the structural basis of the neuro-psychic activity, the interaction between the imaginal neuro-psychic activity and reflex action in animals, the interaction between the conscious and reflex action of man and others. He was one of the first to widely utilize the newest methods of investigating electric processes in the central nervous system. He is the author of a treatise "General Physiology of the Muscle and Nervous System" (1937, Stalin Prize 1941).

Bibliography:

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Nervous Mechanisms of Spatial Orientation of Mammals. Tbilisi: 1959.

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BERNSHTEYN, SERGEI NATANOVICH (Mathematician)

S. N. Bernshteyn was born March 6, 1880 in Odessa. He did graduate work in the Sorbonne in 1899 and also at the Paris Higher Electrical Engineering School in 1901. In 1904 he received the Doctor of Mathematical Science in Paris and in 1914 the Doctor of Pure Mathematics at Kharkov. From 1907 to 1908 Bernshteyn was professor at the Petersburg Women's Polytechnical School and from 1908 to 1918, professor at the Higher School for Women at Kharkov. He taught at Kharkov University from 1907 to 1933 and in 1920 became a professor there. He was a professor at the Leningrad Polytechnical Institute during 1933-1941 and about the same time, 1934-1941, at Leningrad University. In 1935 he joined the staff of the Mathematics Institute of the U.S.S.R. Academy of Sciences. Bernshteyn was elected a Corresponding Member of the U.S.S.R. Academy of Sciences in 1924, and in 1929 an Academician. Since 1925 he has been a member of the Ukrainian Academy of Sciences. He was made an Honorary Member of the Moscow Mathematical Society in 1940. In 1955 he became a Foreign Member of the Paris Academy of Sciences. He was awarded in 1941 a Stalin Prize.

Bernshteyn's scientific work deals chiefly with the theory of differential equations, and the theory of approximations by polynomials of functions. Early investigations (1903) of second order equations of the elliptical type led him to the conclusion that under certain general conditions their solutions become analytical functions which can be represented as a power series. Bernshteyn developed a new method of solving elliptical differential equations. He also studied the functional approximation of polynomials, further developing the theory proposed by P. L. Chebishev and continued by the scientists of the Petersburg School. This work establishes the accuracy with which a function can be approximated by polynomials of different powers and by differential functional properties (as for instance through derivatives of a definite order). Bernshteyn, with his students, created a new branch in the theory of functions, which he called "the constructive theory of functions." His contributions in the field of probability are: the establishment of an axiomatic structure of the theory of relativity (1917); investigations of finite theorems (continuation and completion of the work of A. A. Markov, Sr. and A. M. Lyapunov); study of stochastic differential equations and the practical application of the theory of probability to solutions of problems in physics and statistics.

Bibliography:

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Biography:

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BEY-BIENKO (BEI-BIENKO), GRIGORII YAKOVLEVICH
(Entomologist)

G. Ya. Bey-Bienko was born February 7, 1903. In 1925 he graduated from the Siberian Agricultural Academy in Omsk. From 1929 to 1938, he worked at the All-Union Research Institute of Plant Protection in Leningrad. In 1938, he became a professor at the Leningrad Agricultural Institute and laboratory chief at the U.S.S.R. Academy of Sciences Institute of Zoology in 1947. From 1946 to 1948, he worked at the Institute of Applied Zoology and Phytopathology. He was awarded the N. A. Kholodkovskii Prize in 1951, and a State Prize in 1952. In 1953 he was elected to the U.S.S.R. Academy of Sciences as a Corresponding Member. He was, in 1954 and 1960, a Vice-President of the All-Union Entomological Society.

Numerous scientific investigations of Bey-Bienko deal with theoretical and applied entomology and ecology. He is the author of monographs on the series: "Fauna of the U.S.S.R.," "Dermapterous Insects" (1936), "Orthoptera. Subfamily of Foliar long-horned Grasshoppers (Phaneropterinae)" (1954), "Cockroaches" (1950).

Bibliography:

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and others. Agricultural Entomology, 3rd ed. (V. N. Shchegolev, ed.) Moscow-Leningrad: 1955.

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BITSADZE, ANDREI VASILEVICH (Mathematician)

A. V. Bitsadze was born May 22, 1916 in Chiaturskii Rayon, in the Georgian S.S.R. He graduated from the Tbilisi University in 1940 and in 1951 received his Doctor of Physical-Mathematical Science degree. In 1941 he began working at the Institute of Mathematics of the Georgian S.S.R. Academy of Sciences. From 1942 to 1947 he also taught at Tbilisi University. In 1948 he went to work at the Mathematics Institute of the U.S.S.R. Academy of Sciences. Bitsadze has been a member of the Communist Party of the Soviet Union since 1947. In 1958 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences.

Bitsadze's main work is on the theory of differential equations with partial derivatives (systems of elliptical equations, compound equations) and singular integral equations.

Bibliography:

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BLAGONRAVOV, ANATOLII ARKADIEVICH (Mechanical Engineer)

A. A. Blagonravov was born June 1, 1894. He is a graduate of the following institutions: the Mikhailovskoe School of Artillery (1916), Artillery College (1924), and the Military Technical Academy (1929). From 1929 to 1946 he was on the staff of the Moscow Academy of Artillery and in 1938 was made a professor there. He was President, in 1946-1950, of the Academy of Artillery Science. Blagonravov was made Director of the Machine Science Section of the U.S.S.R. Academy of Sciences in 1953. In 1957 he became Academic Secretary of the Technical Science Division of the U.S.S.R. Academy of Sciences. He has been a member of the Communist Party since 1937. In 1940 he was given the permanent rank of lieutenant general in the artillery. Since 1943 he has been an Academician of the U.S.S.R. Academy of Sciences.

Blagonravov's scientific contributions are in the field of machinery and mechanics of armaments. His main work, Basic Principals of Automatic Weapons (1931), is a valuable source of fundamental calculations in the construction of weapons.

In April 1962, Blagonravov was appointed Editor in Chief of Izvestiya Akad. Nauk S.S.S.R., Otdel. Tekh. Nauk. He has attended the Pugwash Conferences.

Bibliography:

Material Part of a Shooting Weapon, I & II. Moscow: 1945-46.

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BLINOVA, EKATERINA NIKITICHNA (Dynamic Meteorologist)

E. N. Blinova was born December 7, 1906. She graduated from North Caucasus University (Rostov-on-the-Don). In 1935 to 1945, she was senior scientific research associate at the Main Geophysical Observatory. In 1943 she began working at the Central Institute of Weather Forecasting in Moscow. Since 1953 she has been a Corresponding Member of the U.S.S.R. Academy of Sciences.

Continuing the work of N. E. Kochin (1901-1944, mathematician), Blinova investigated in detail the conditions of atmospheric front stability (1936). Later, from 1938, she studied the general circulation of the atmosphere and developed a theory of radiative equilibrium in the atmosphere. She was successful in making a quantitative explanation of the existence of the so-called centers of atmospheric action. For this, she studied wave disturbances occurring in the general east-west atmospheric flow. She utilized the same wave method for a quantitative analysis of such atmospheric macroprocesses as the origin and development of cyclones and anti-cyclones. Blinova indicated in her works methods of long-term weather forecasting by means of integration of the so-called vortex equations proposed by A. A. Fridman (1888-1925, physicist), which are widely utilized at the present time for weather forecasting with the aid of electronic computers and for solving other problems in atmospheric dynamics.

Bibliography:

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Method of solving a non-linear problem of atmospheric movements of a planetary scale. Doklady Akad. Nauk S.S.S.R., New Series, 1956, 110, #6.

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BLOKHINTSEV, DMITRII IVANOVICH (Physicist)

D. I. Blokhintsev was born January 11, 1908. After graduating from Moscow University in 1930, he taught there and in 1936 was made professor. In 1935-1956 he worked at the Physics Institute and at the Atomic Power Plant of the U.S.S.R. Academy of Sciences. He became Director of the Joint Institute of Nuclear Research in 1956. Since 1943, Blokhintsev has been a member of the Communist Party of the Soviet Union. In 1939 he was elected a Corresponding Member of the Ukrainian S.S.R. Academy of Sciences and in 1958 a Corresponding Member of the U.S.S.R. Academy of Sciences. He was awarded a Stalin Prize in 1952 and in 1957 a Lenin Prize.

Blokhintsev's interests are in the theory of solid bodies, optics, acoustics, field theory, quantum mechanics, philosophy of natural science, atomic physics and technology. He presented (1934) a quantum theory of the phosphorescence of solid bodies, and a theory of spectra of absorption and of fluorescence of complex molecules. A series of investigations by Blokhintsev are devoted to phenomena in semi-conductors; particularly, in the theory of solid rectifiers. Blokhintsev also investigated the distribution of sound in an inhomogeneous moving medium. He directed the construction of the Soviet atomic power plant (1954). Blokhintsev is the author of a text on quantum mechanics for universities.

Bibliography:

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On non-local and non-linear field theories. Uspekhi Fiz. Nauk, 1957, 61, #2.

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BOCHVAR, ANDREI ANATOLEVICH (Metallographer)

A. A. Bochvar was born July 26, 1902, son of A. M. Bochvar (1870-1947, founder of the school of metallurgists). In 1923 he graduated from the Moscow Higher Technical School and then taught there. He began teaching at the Moscow Institute of Non-Ferrous Metals and Gold in 1930, and in 1934 he became a professor. In 1939 Bochvar was elected Corresponding Member of the U.S.S.R. Academy of Sciences and in 1946 Academician. He is a Hero of Socialist Labor and a recipient of a Stalin Prize.

Bochvar's basic studies are concerned with the kinetics of eutectic crystallization (doctoral dissertation, 1935), the re-crystallization of metals and alloys, the deformation of alloys at high temperatures, the crystallization of alloys under pressure and the relation of the casting properties of alloys to their phase diagrams. Having carried out experimental research in the mechanism of eutectic crystallization, Bochvar constructed a theory for structural peculiarities and anomalies of alloys. He established the temperature patterns of the crystallization of metals and alloys (the so-called "Bochvar Rule"), and formulated the principles of a structural theory of heat-resistance. Studies on the crystallization of alloys under pressure permitted him, jointly with A. G. Spasski, to develop new industrial methods of shaping castings by crystallization under pressure,

thus eliminating porosity of aluminum alloys, and to work out new principles of casting, ensuring significant metal reduction. Bochvar wrote a series of textbooks on metallography and the thermal treatment of metallic alloys.

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BOGOLYUBOV, NIKOLAI NIKOLAEVICH (Mathematician)

N. N. Bogolyubov was born in 1900 in Nizhnii Novgorod (now Gorkii) and in 1922, he moved with his mother to Kiev, where he attracted the attention of mathematicians D. A. Grave and N. M. Krilov. In 1923 he began work in a seminar sponsored by the department of mathematical physics of the Academy of Sciences of the Ukrainian S.S.R. under the direction of N. M. Krilov. In 1924, he wrote his first scientific paper. In 1925, by special permission, he was admitted with no diploma from a higher educational institution as an associate of the department of mathematical physics of the Academy of Sciences of the Ukrainian S.S.R. In 1928, he defended his candidate's dissertation on the subject "The Use of Direct Methods in the Calculus of Variations for Investigation of Irregular Cases of the Problem of the Extreme." In 1930, the Presidium of the Academy of Sciences of the Ukrainian S.S.R. awarded him the degree Doctor of Mathematics honoris causa.

Starting in 1928, Bogolyubov was employed by the Academy of Sciences of the Ukrainian S.S.R. In 1936, he became chairman of a department, first at Kiev University, and in 1959 at Moscow University. From 1946 to 1949, he was Dean of the Mechanics and Mathematics Division of Kiev University; he was chairman of a number of departments of the Academy of Sciences U.S.S.R. (Department of Nonlinear Mechanics of the Institute of Structural Mechanics, Department of Mathematical Physics of the Institute of Mathematics). Since 1956, he has been in charge of the Department of Theoretical Physics of the Mathematics Institute imeni V. A. Steklov of the Academy of Sciences U.S.S.R., as well as of the Laboratory of Theoretical

Physics of the Joint Institute of Nuclear Research in Dubno. He established the School of Nonlinear Mechanics in Kiev and the School of Theoretical Physics in Moscow. These schools have made a great contribution both to the development of theoretical science and to the solution of numerous practical problems of modern physics and engineering. Bogolyubov has been invited many times to deliver lectures on his research at foreign universities and scientific research institutes, as well as at international congresses and conferences. A number of his monographs have been translated into foreign languages.

In 1939, Bogolyubov was elected Corresponding Member of the Academy of Sciences of the Ukrainian S.S.R., in 1947 Corresponding Member of the Academy of Sciences U.S.S.R., and in 1948 an Academician of the Academy of Sciences of the Ukrainian S.S.R. In 1953, he was elected Academician by the Academy of Sciences U.S.S.R. He received an honorary doctorate from the University of Hyderabad. For his research in the field of nonlinear mechanics and statistical physics, set forth in the monographs, "On Some Statistical Methods in Mathematical Physics," and "Problems of Dynamic Theory in Statistical Physics," Bogolyubov received in 1947 a Stalin Prize, First Class. For his investigation in superconductivity, he was awarded the Lomonosov Prize in 1957. In 1958, he was awarded the Lenin Prize for working out the new methods in quantum field theory and in statistical physics which had led, in particular, to substantiation of the theory of superfluidity and the theory of superconductivity. Other awards he has received include another Stalin Prize and seven orders, among them three Orders of Lenin and the Order of the Red Banner of Labor.

The scientific activity of Bogolyubov, which has extended over more than 30 years, covers varied fields of analysis, function theory, differential equations, theory of vibrations, theory of stability, and quantum field theory. During the period of his productive scientific inquiry, he published over 170 scientific papers, including a series of fundamental monographs. The following is a brief outline of the principal lines of his work.

His earliest research was in the field of the calculus of variations. This research was devoted to the development of direct methods for the solution of extreme problems which do not require regularity or quasi-regularity of the corresponding operations. At an international congress devoted to problems of the calculus of variations, his paper entitled "New Methods in the Calculus of Variations," was awarded the A. Mertani Prize of

the Bologna Academy of Sciences. A number of the investigations by Bogolyubov have dealt with the theory of quasi-periodic functions. He showed that the basic theorems of quasi-periodic functions (for instance, the theorem of the uniform approximation of a continuous quasi-periodic function by trigonometric sums) result from one general theorem in the field of an arbitrary limited function. According to this theorem, certain linear combinations from an arbitrary limited function are capable of being approximated by trigonometric sums. The proof of the approximation theorem for the quasi-periodic functions of Bohr, presented by Bogolyubov, does not rely upon the Parseval equality; in general, it relies upon virtually none of the properties of functions quasi-periodic in the sense of Bohr. In the proof of this theorem, the underlying principle is an original purely mathematical conception of the properties of quasi-periods. In this Bogolyubov has presented a virtually new synthesis of Bohr's theory of quasi-periodic functions.

Bogolyubov has carried out a series of investigations dealing with the theory of differential equations with limiting conditions, directly linked to the application of the differentiation method to the calculus of variations. The basis of these investigations is the estimation of error in the approximate determination of proper values and characteristic functions of the boundary. The approximation method developed here by Bogolyubov is applicable not only to the solution of boundary problems, but also to the solution of partial differential equations. Starting in 1932, he began work with N. M. Krilov on the development of a completely new branch of mathematical physics--the theory of nonlinear oscillations which they called nonlinear mechanics. It should be noted that, in the twenties, the rapid development of radio and electrical engineering required a study of nonlinear oscillations. The use, for this purpose, of methods developed by A. Poincaré and A. M. Lyapunov was completely inadequate. It was necessary to develop new, more flexible methods of investigation of all the complex phenomena originating in nonlinear oscillatory systems. The research of Bogolyubov developed in two principal directions: that of the development of methods for the asymptotic integration of nonlinear equations describing oscillatory processes, and that of the mathematical substantiation of these methods, and this was equivalent to the development of a general theory of dynamic systems.

In the first of these directions, having to do with the study of differential equations with a "small" or "large" parameter,

Bogolyubov was successful in extending the methods of the turbulence theory to general nonconservative systems and in developing new asymptotic methods in the theory of nonlinear oscillations. These asymptotic methods, grounded in mathematics, not only permitted a solution in the first approximation (as, for instance, does the Van der Pohl method) but also in higher degrees of approximation and could be applied to the study of both periodic and quasi-periodic oscillatory processes. These methods were simple for practical use embodying a highly effective principle of equivalent linearization, the symbolic method, etc.

A number of investigations by Bogolyubov in nonlinear mechanics deal with the rigorous foundation of asymptotic methods, the estimation of error over a finite interval, the determination of correspondence of some properties of precise and approximate solutions over an infinite interval, and the proof of some existence and stability theorems of quasi-periodic solutions. Interesting and elegant theorems were proven in the investigation of stationary oscillatory processes. Making use of the Poincaré-Lyapunov theory, as well as of the Poincaré-Danzhua theory of trajectories on a tore, he was successful in investigating the nature of a precise stationary solution in the vicinity of an approximate solution. In the theoretical field of nonlinear mechanics he also investigated the abstract theory of dynamic systems. He made a full investigation of the structure of the invariant dimensions of a compact dynamic system. A study was made of the existence and the basic properties of ergodic numbers emerging in the phase space of a dynamic system, corresponding physically to a stationary oscillation science.

In his first works in theoretical physics, which were related to asymptotic methods, Bogolyubov examined problems dealing with the influence of a random force on a harmonic oscillator, and the establishment of statistical balance in a system connected to a thermostat.

A number of his investigations deal with questions in statistical mechanics of classical systems. Here, he has developed a method of distribution functions, the essence of which lies in the development of analytical calculation methods which give probability distribution function of the particle complexes in the examined system. On the basis of Gibbs' distribution, he arrived at a method for constructing a system of equations for these functions, and indicated methods of their solution for various cases. Extending the technique of distribution functions to the case of unbalanced processes, Bogolyubov approaches

from a single point of view the theory of and the calculation of kinetic equations for systems of interacting particles, and provided a general procedure for synthesizing them based on the fundamental theorems of statistical mechanics.

He obtained results of no lesser importance in quantum statistics. Generalizing for the case of quantum systems the method of kinetic distribution functions, he provided a general method of constructing kinetic equations for quantum systems. Interesting results were also obtained by him in questions connected with the behavior of electrons in metal. Here he developed a method of approximate second quantization based on the fact that, under certain assumptions, it is possible to represent the energy spectrum of a Fermi system in the form of an aggregate of elementary excitations that are subject to Bose statistics.

Highly important accomplishments of Bogolyubov are set forth in investigations dealing with superfluidity and superconductivity. It is well known that quantum systems consisting of a large number of identical particles manifest, at low temperatures, the highly unique phenomenon of degeneration. This phenomenon had been studied only for ideal gases. The first results in the theory of the degeneration of non-ideal gases were obtained by him as early as 1947, it being shown that a weakly non-ideal Bose gas can occur in a degenerate state and will then possess the property of superfluidity. In this manner, the first step was made toward the development of the microscopic theory of the superfluidity of Helium II.

Development of the ideas and methods which he expressed in his works of 1947 and 1948 made it possible for him to evolve in 1958 a systematic microscopic theory of superconductivity. An important part in understanding the essence of superconductivity was played by Froelich's idea of the decisive role of the interaction of electrons with lattice oscillations, and the prediction on that basis of the isotopic effect. It was, however, impossible to solve the problem on the Hamiltonian basis proposed by Froelich on account of the many difficulties of a purely mathematical nature. Bogolyubov was successful in solving this problem and, as a result, not only developed a systematic theory of superfluidity, but also established the fundamental fact that superconductivity may be regarded as the superfluidity of an electron gas, or more generally, as the superfluidity of Fermi systems. Recently these results have found application in nuclear theory.

In the field of quantum field theory Bogolyubov made an attempt at a completely new synthesis rejecting the Hamiltonian formalism and replacing it by physical conditions, notably that of causality. A systematic exposition of quantum field theory is given by him in the monograph, "Introduction to the Theory of Quantum Fields." Bogolyubov also gave a rigorous proof of the so-called dispersional relations, introducing a new method in quantum field theory. He uncovered the underlying premises of quantum field theory necessary for the derivation of dispersion relationships, and provided rigorous proof for the validity of these relations. He proved a series of theorems lying on the borderline of the theory of multiple complex variables and the theory of generalized functions.

Bogolyubov has attended the Pugwash Conferences.

As of 1961, Bogolyubov was a Member of the Presidium of the Siberian Branch U.S.S.R. Academy of Sciences.

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BOGOROV, VYENIAMIN GRIGOR'YEVICH (Oceanographer)

V. G. Bogorov was born December 24, 1904. He graduated from Moscow University in 1926. From 1930 to 1941 he was employed at the All-Union Institute of Fisheries and Oceanography. Since 1941 he has been working at the U.S.S.R. Academy of Sciences Institute of Oceanography (known as the Laboratory on Oceanography until 1946). In 1958 he was elected to the U.S.S.R. Academy of Sciences as a Corresponding Member. He was awarded, in 1951, a Stalin Prize.

Bogorov's main investigations are the typology of seas, the geographic zoning of oceans, the productivity of seas, the twenty-four hour migration of plankton, and biological seasons. He advanced new methods and instruments for quantitative investigation of plankton, and for undertaking marine expeditionary work.

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BOKII, GEORGII BORISOVICH (Crystallographer Chemist)

G. B. Bokii was born September 26, 1909. He graduated in 1930 from the Leningrad Mining Institute and began working at the Institute of General and Inorganic Chemistry of the U.S.S.R. Academy of Sciences. In 1939 he joined the teaching staff of Moscow University and in 1944 was made professor. Bokii has been a member of the Communist Party of the Soviet Union since 1944. In 1958 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences. He was awarded two Orders of the Badge of Honor and also medals.

Bokii has used crystallographic methods for study of complex compounds. Together with S. S. Batsanov he developed a crystallo-optic method of determining the structure of complex compounds. For this work he was awarded (in 1954) the Prize of the Presidium of the U.S.S.R. Academy of Sciences. Bokii proposed a method of quantitatively determining the values of trans-influence in measuring interatomic distances in crystals of complex compounds. This was reported at the International Congress on Crystallography in 1957 in Canada. He worked out an atomic structure theory of daltonides and berthollides (1956).

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BOL'SHAKOV, KIRILL ANDREEVICH (Chemist)

K. A. Bol'shakov was born December 24, 1906. He graduated from the University of Kazan' in 1930 and from then until 1948

worked at the Institute of Rare Minor Metals in Moscow. He began teaching at the Moscow Institute of Fine Chemical Technology in 1933 and in 1948 was made professor. In 1958 Bol'shakov was elected a Corresponding Member of the U.S.S.R. Academy of Sciences. He received a Stalin Prize in 1941.

Bol'shakov's main investigations deal with the physical-chemical basis of technological processes in obtaining rare elements.

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BORESKOV, GEORGII KONSTANTINOVICH (Physical Chemist)

G. K. Boreskov was born April 20, 1907. He graduated from Odessa Institute in 1928, and from 1928 to 1937 he worked at the Ukrainian Chemical-Radiology Institute (Odessa; now the Ukrainian branch of the Institute of Rare Metals). He also taught at the University of Odessa in 1934-37 and in 1930-37 at the Odessa Chemical-Technological Institute. From 1937 to 1949 he was Chief of the Laboratory of Catalysis for the Scientific Research Institute of Fertilizers and Insectofungicides. In 1946 he began working at the Karpov Physico-Chemical Institute and in 1949 became professor at the Moscow Chemico-Technological Institute of D. I. Mendeleev. Boreskov has been a Corresponding Member of the U.S.S.R. Academy of Sciences since 1958. He was awarded a Stalin Prize in 1942, and two orders and medals.

The investigations of Boreskov deal with the study of catalytic processes, the development of a scientific basis for selecting and preparing catalysis and designing catalytic reactors. He proposed a vanadium catalyst for producing sulphuric acid,

which is utilized in contact sulphuric acid plants. He investigated the influence of processes of heat and matter transfer on the speed of contact reactions and selectivity of catalyst action.

As of 1961, Boreskov was Director of the Institute of Catalysis, Siberian Branch of U.S.S.R. Academy of Sciences.

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Biography:

M. G. Slin'ko. Georgii Konstantinovich Boreskov (On the 50th Anniversary since the date of birth). Zhur. Fiz. Khim., 1957, 31, #4.

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BRAUNSTEIN, ALEKSANDR EVSEEVICH (Biochemist)

A. E. Braunstein was born May 26, 1902. He graduated in 1925 from the Kharkov Medical Institute. In 1930-1936 he worked as senior scientific worker at the Bakh Biochemical Institute of the People's Commissariat of Public Health of the U.S.S.R. He began working at the All-Union Institute of Experimental Medicine in 1936 as Chief of the Section on Metabolism and subsequently, at the Institute of Biological Medical Chemistry of the U.S.S.R. Academy of Medical Sciences. In 1959, Braunstein became a laboratory Chief at the U.S.S.R. Academy of Sciences Institute of Radiation and Physico-Chemical Biology. He became a Corresponding Member of the U.S.S.R. Academy of Medical Sciences in 1945, and in 1960 a Corresponding Member of the U.S.S.R. Academy of Sciences. In 1941 he received a Stalin Prize.

Braunstein's investigations deal with nitrogen exchange of amino acids and proteins and with enzymology. He discovered the process of enzymatic reamination of amino acids (1937), investigated its biological role, and presented a new view of the assimilation and dissimilation of nitrogen in living and other organisms (1939-1957). He studied other enzymatic transformations of amino acids (1948-1952). He discovered a series of functions of B₆ in the transformations of tryptophane oxy-amino acids, and sulphur-containing amino acids (1949-1956).

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✓ BREKHOVSKIKH, LEONID MAKSIMOVICH (Physicist)

L. M. Brekhovskikh was born May 6, 1917. He graduated in 1939 from the University of Perm. In 1953 he was appointed professor at Moscow University, and in 1954 he was made Director of the Acoustical Institute, U.S.S.R. Academy of Sciences. Since 1953 he has been a Corresponding Member of the U.S.S.R. Academy of Sciences and in 1951 he was the recipient of a Stalin Prize.

Brekhovskikh's early investigations are on scattering of x-rays in crystals and liquids. From 1942 his main scientific interest has been in acoustics and wave propagation. He investigated the propagation of sound and electromagnetic waves in heterogeneous media and developed the theory of wave fields and point sources in layer-heterogeneous media. In particular, he presented a theory on the so-called side and head waves, which play an important role in seismographic surveys. A number of Brekhovskikh's investigations are in the scattering of sound electromagnetic waves on uneven surfaces. Together with others, he discovered (1946) the super-distance propagation of sound in the sea.

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BRODSKY (BRODSKII), ALEKSANDR IL'ICH (Physical Chemist)

A. I. Brodsky was born June 19, 1895. He graduated from Moscow University. Since 1938 he has been Director of the Institute of Physical Chemistry of the Ukrainian S.S.R. Academy of Sciences. Brodsky has been an Academician of the Ukrainian S.S.R. Academy of Sciences since 1939 and since 1943 a Corresponding Member of the U.S.S.R. Academy of Sciences. In 1946 he was awarded a State Prize. He was elected, in 1962, Honorable Member of the Polish Chemical Society.

Brodsky investigated the influence of solvents on chemical equilibrium, on electrode potentials, and on optical properties of solutions. He pioneered and organized (from 1934) investigations on chemical reactions using isotopes. He studied isotope exchange reactions, and the isotope composition of natural waters and rocks. Since 1939 he has investigated the mechanisms of organic and exchange reactions.

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Biography:

Aleksandr Il'ich Brodsky, Specialist in the Area of Physical Chemistry. (On the 60th Anniversary Since the Date of Birth). Ukr. Zhur. Khim., 1955, 21, #4.

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BRUEVICH, NIKOLAI GRIGOREVICH (Mechanical Engineer)

N. G. Bruevich was born November 12, 1896 in Moscow. He graduated from Moscow University in 1922 and from Moscow Aviation Institute in 1930. In 1937 he received the degree of Doctor of Technical Sciences and became professor. He joined the teaching staff in 1929 of the Zhukovskii Academy of Military and Air Engineering. In 1951 he began teaching at the Machine Institute of the U.S.S.R. Academy of Sciences. During World War II (1941-1945), he was in charge of evaluating and resolving problems pertaining to aviation. He is a lieutenant general of engineers. Since 1921 Bruevich has been a member of the Communist Party of the Soviet Union. In 1939 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences, and in 1942 an Academician.

In the 1930's Bruevich developed general methods of kinematic and kinetostatic analyses for plane and space mechanisms. While working on computing machines and precision movements of mechanisms, he established a theory of precision in machinery. The application of this theory provides a rational approach for planning and manufacturing mechanical devices and precision instruments. He also instituted a course dealing with working principles of computing machines.

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BRUK, ISAAK SEMYONOVICH (Electrical Engineer)

I. S. Bruk was born November 9, 1902. He graduated from the Moscow Technical College in 1925, and has been working at the U.S.S.R. Academy of Sciences Institute of Energetics since 1935. In 1956, he became Chief of the U.S.S.R. Academy of Sciences Laboratory on Directing Machines and Systems, and later was made Director of the Institute. He was elected, in 1939, to the U.S.S.R. Academy of Sciences as a Corresponding Member.

Bruk has worked on power electric and mathematical machines. In 1936-38, the first U.S.S.R. machines for integrating ordinary differential equations were built according to the design of Bruk. A computing device, "computing table of alternating current" for investigating electrical systems was built in 1945-1947 under his leadership. From 1948 he has conducted work on high speed electronic computers. The M-1, M-2, M-3 machines were built in 1950-55.

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BUDKER, GERSH ITSKOVICH (Physicist)

G. I. Budker was born May 1, 1918. He graduated in 1941 from Moscow University. In 1946 he began work at the Institute of Atomic Energy of the U.S.S.R. Academy of Sciences. He also became a professor, in 1956, at the Moscow Engineering Physics Institute. In 1957 Budker was made Director of an Institute of the Siberian branch of the U.S.S.R. Academy of Sciences. Since 1958 he has been a Corresponding Member of the U.S.S.R. Academy of Sciences.

Budker has investigated the theory of heterogeneous uranium-graphite reactors, the theory on kinetics and control of atomic reactors, and the theory and calculation of a circular-orbit accelerator of charged particles. From 1951 he has worked on plasma physics, the design of new types of accelerators and the realization of controlled thermonuclear reactions. He has investigated the theory of a stabilized electron beam, and a kinetic equation for relativistic plasma.

As of 1961, Budker was a Member of the Siberian Branch Presidium and the Director of the Institute of Nuclear Physics of the Siberian Branch U.S.S.R. Academy of Sciences.

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BUDNIKOV, PYOTR PETROVICH (Inorganic and Industrial Chemist)

P. P. Budnikov was born October 21, 1885. He graduated in 1911 from the Riga Polytechnical Institute. From 1919 to 1926 he was professor at the Ivanova-Voznesensk Institute and from 1926 to 1941 at the Khar'kov Chemico-Technological Institute. In 1943 he became professor at the Moscow Chemico-Technological Institute. Since 1939 he has been a Corresponding Member of the U.S.S.R. Academy of Sciences and Academician of the Ukrainian S.S.R. Academy of Sciences. Budnikov

was an Honored Scientist of the Ukrainian S.S.R. in 1943. In 1942, 1950, and 1952, he was awarded Stalin Prizes.

The chief emphasis of the works of Budnikov is given to a complex study of the mineral wealth of the U.S.S.R. and establishing a method for its utilization. The long study of Budnikov on the investigation of gypsum broadened the latter's use in the building and chemical industries. He invented an anhydridic cement. As a result of his study of the chemical processes during hydration and solidification of blast furnace slag, Budnikov discovered new types of hydraulic cement--sulfated non-clinker and low-clinker slag cements, high quality, quick hardening and expanding cement--which were widely utilized. Work was carried out by Budnikov in the field of hydro-thermal processing of building materials, and refractory material for the coke, chemical and metallurgical industries. A series of his works is devoted to the thermo-chemistry of binding agents, the chemical and thermal stability of refractory material, and corrosion of cements and concrete. He studied reactions in solid phases in silicate systems and developed new methods of investigating silicates.

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and others. Technology of Ceramics and Refractory Material, 2nd ed. Moscow: 1954.

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Biography:

D. S. Belyankin, ed. Collection of Works Devoted to the 60th Anniversary Since the Date of Birth of P. P. Budnikov. Moscow: 1946.

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BUSHUYEV, KONSTANTIN DAVYDOVICH (Physicist)

K. D. Bushuyev was born in 1914. In 1941 he graduated from the Moscow Aviation Institute. Since 1941 he has been a member of the Communist Party of the Soviet Union. In 1960 he was elected to the U.S.S.R. Academy of Sciences as a Corresponding Member.

Bushuyev's works deal with theoretical and applied mechanics.

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BYKHOVSKII, BORIS EVSEEVICH (Parasitologist)

B. E. Bykhovskii was born in 1908. In 1930 he graduated from the biological department of the Leningrad State University Institute of Physico-Mathematics. From 1929 to 1939, he was a laboratory worker, scientific worker, senior scientific worker of the Fishing Industry Institute in Leningrad. He was, in 1939-40, senior scientific worker of the U.S.S.R. Academy of Sciences Zoological Institute. From 1940-44 he was deputy chairman of the Presidium of the Tadzhik branch of the U.S.S.R. Academy of Sciences. He was deputy Director of the U.S.S.R. Academy of Sciences Zoological Institute and chief of the Laboratory on Helminth Parasitology at this Institute from 1942 to 1959, when he was reappointed deputy Director of the U.S.S.R. Academy of Sciences Zoological Institute. In September 1962 he was made Acting Director of this Institute.

Since 1941 he has been a member of the Communist Party of the Soviet Union. In 1960 he was elected to the U.S.S.R. Academy of Sciences as a Corresponding Member.

Bykhovskii's main works deal with the study of parasitic lower helminths.

Bibliography:

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CHELOMEI, VLADIMIR NIKOLAEVICH (Mechanical Engineer)

V. N. Chelomei was born June 30, 1914. Upon graduating from the Kiev Aviation Institute in 1938, he taught there. From 1941 to 1944, he worked at the Central Institution of Aircraft Engines, and subsequently in a number of scientific research organizations. He has been a professor at Moscow Technical College since 1952. Since 1941 he has been a member of the Communist Party of the Soviet Union. In 1958 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences, and in June 1962, an Academician.

Chelomei's main work deals with mechanics, dynamics of machinery, theory of pneumatic and hydraulic servomechanisms.

Bibliography:

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Investigation of pneumatic and hydraulic servomechanisms. Automatic Control and Computing Techniques, Moscow, 1958, #1.

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CHEPIKOV, KONSTANTIN ROMANOVICH (Geologist)

K. R. Chepikov was born January 6, 1901. He graduated from the Moscow Mining Academy in 1929. He conducted geological surveys for locating oil on the Kerch Peninsula, Northern Caucasus, Siberia, and particularly in the Ural-Povolzh'e region. In 1947 he became Chief of the Laboratory on Oil Geology at the Institute of Geological Sciences, and in 1954 was made deputy Director of the U.S.S.R. Academy of Sciences Oil Institute. He was awarded a Stalin Prize in 1946, has been a member of the Communist Party of the Soviet Union since 1919, and was elected to the U.S.S.R. Academy of Sciences as a Corresponding Member in 1953.

Bibliography:

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Age of Ufimskii deposits. Izvest. Akad. Nauk S.S.S.R., Geol. Ser., 1948, #4.

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CHERNIGOVSKII, VLADIMIR NIKOLAEVICH (Physiologist)

V. N. Chernigovskii was born March 1, 1907. He graduated from Perm University Medical College in 1930; in 1930 to 1932 he was assistant at the Orenburg Veterinary Institute and in 1932 to 1937 at the Sverdlovsk Medical Institute. From 1937 to 1941 he was senior research associate and in 1944 professor in

the Department of General Physiology at the All-Union Institute of Experimental Medicine (Leningrad). Chernigovskii also worked in the Naval Academy, Leningrad, from 1941 to 1953 and at the same time at the Institute of Physiology (reorganized into the Institute of Normal and Pathological Physiology of the Academy of Medical Sciences). In 1953, he was made Director of this Institute. He was elected a Corresponding Member of the U.S.S.R. Academy of Sciences in 1953 and in 1960 an Academician. Chernigovskii has been a Corresponding Member of the Academy of Medical Sciences since 1948, and an Academician since 1950. From 1953 to 1957 he was Vice-President of the Academy of Medical Sciences. In 1944 the Academy of Sciences awarded him the I. P. Pavlov Prize for his "Afferent System of Internal Organs." As of 1961 he was Director of the I. P. Pavlov Institute of Physiology. In March 1962 he was elected to the Supreme Soviet as a delegate from R.S.F.S.R.

The basic works of Chernigovskii are devoted to the research on interoceptive reflexes and functional interrelations between the cortex of the cephalic brain and internal organs. He studied interoceptive reflexes and their mechanisms in detail. New reflexes were described and characteristics given of the interoceptive analyzer. Extensive investigations were made of reflex control in the blood system and the role of the nervous system in the pathogenesis of a number of diseases.

Bibliography:

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and S. M. Zarayskaya. Presentation of the vagus nerve in the central cortex and radial lobe of feline brain. Doklady Akad. Nauk S.S.S.R. 147, #3 (1962).

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CHERNYAEV, IL'YA IL'ICH (Inorganic Chemist)

I. I. Chernyaev was born January 20, 1893. In 1915 he graduated from Leningrad University and taught there becoming a professor in 1932. He was a student of L. A. Chugaev (1873-1922, professor of Inorganic Chemistry at Leningrad University and founder and director of the Institute for the Study of Platinum of the U.S.S.R. Academy of Sciences). Beginning in 1918, he also worked at the Institute on the Study of Platinum of the U.S.S.R. Academy of Sciences. From 1934 Chernyaev worked

at the Institute of General and Inorganic Chemistry of the U.S.S.R. Academy of Sciences and in 1941 became its Director. In addition, he was professor of Moscow Petroleum Institute from 1935 to 1941. And in 1945 he was made professor at Moscow University. Chernyaev was elected Corresponding Member of the U.S.S.R. Academy of Sciences in 1933 and in 1943 Academician. In 1946 and 1952 he won Stalin Prizes.

Chernyaev has investigated the chemistry of complex compounds. In 1915 Chernyaev completed an investigation of hydroxylamine compounds of divalent platinum. In 1926 Chernyaev published his work on the study of nitro compounds of divalent platinum. Using these compounds he discovered trans-influence. It is constituted by the fact that the dependence of the reaction ability of any substitute in the internal sphere of a complex compound depends upon the nature of the substitute which is in contraposition to it. This phenomenon, associated with his name, was found to be applicable to a series of compounds of tetravalent platinum, palladium, rhodium, iridium and cobalt. Using transinfluence, Chernyaev and his students synthesized many complex compounds. Chernyaev discovered the change in the sign of the rotation of a plane of polarization by optically active amino compounds of tetravalent platinum during their transformation into amido- (or imido-) compounds. He studied the oxidation reaction of complex compounds of platinum, reduction of iridium, proved that the binding of the nitro group with platinum takes place through nitrogen, and studied the heat of reactions of complex compounds. A considerable number of Chernyaev's investigations are devoted to refining of platinum metals. As a result he obtained platinum, palladium, gold and rhodium in a spectrally pure state.

As of 1961, Chernyaev was Chairman of the Commission for Considering Works Submitted in Competition for the N. S. Kurnakov Award.

As of September 1962, Chernyaev, at his own request, was relieved of the directorship of the U.S.S.R. Academy of Sciences Institute of General and Inorganic Chemistry and resumed his former position as Chief of the Section on Simple and Complex Inorganic Compounds of this Institute.

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V. V. Lebedinskii and A. M. Rubinshtein. Academician Il'ya Il'ich Chernyaev (on 60th Anniversary since date of birth). Uspekhi Khim., 1953, 22, #3, 241-252.

A. V. Babaeva. Leading Soviet Scientist I. I. Chernyaev (on the 60th Anniversary since the date of birth). Zhur. Obshchei Khim., 1953, 23, #5.

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CHERNYI, GORIMIR GORIMOVICH (Mechanics Specialist)

In 1960 G. G. Chernyi was at the Moscow State University im. M. V. Lomonosov. He visited the United States in January 1960 to attend the International Symposium on Magneto-Fluid Dynamics in Washington, D. C. In June 1962 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences.

CHIBISOV, KONSTANTIN VLADIMIROVICH (Scientific Photographer)

K. V. Chibisov was born March 1, 1897. He graduated from Moscow University in 1922. From 1918 to 1930 he worked at the Air Force Scientific Testing Institute of Scientific Aerophotography and during the same period taught at a number of colleges. In 1950 he became a professor at Moscow University. Chibisov began working, in 1930, at the All-Union Scientific Research Cinema-Photo Institute and was one of its founders. In 1948 he became Chairman of the U.S.S.R. Academy of Sciences Commission on Scientific Photography and Cinematography. In 1945 he was awarded the title Honored Scientist of the R.S.F.S.R., and in 1950 a Stalin Prize. He has been a Corresponding Member of the U.S.S.R. Academy of Sciences since 1946.

The main work of Chibisov is devoted to photographic sensitometry, synthesis of photographic emulsions and the nature of photographic sensitivity. Of particular importance are the works of Chibisov on determining the chemical composition and

the role of centers of light sensitivity, which form in micro-crystals of silver halides in photographic emulsions as a result of interaction with active components of gelatin. Chibisov also investigated the light sensitivity of photographic emulsions.

Bibliography:

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Biography:

V. I. Sheberstov. K. V. Chibisov. Journal of Scientific and Applied Photography and Cinematography, 1957, 2, #1.

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CHINAKAL, NIKOLAI ANDREEVICH (Mining Engineer)

N. A. Chinakal was born November 19, 1888. Upon his graduation from the Simferpol Gymnasium, he studied from 1907 to 1912 at the Dnepropetrovsk Mining Engineers Institute, and after his graduation worked at the Donbas Mines.

Chinakal's work on improving the working conditions of miners promoted him to the rank of progressive specialist, and in 1920, he was appointed assistant to the authorized representative of the Central Administration of the Coal Industry in the Makeevskii Region; later in 1921, he was elected member of the Central Committee of the All-Russian Union of Miners (VSG) and served as Chief of the Economic Section of the VSG Central Committee. At the end of 1921, Chinakal was appointed a member of the governmental commission of the Council of Labor and Defense, and developed a plan for restoring the Donbas. Upon completion of this assignment, he was transferred to the Donugol Combine, where from 1923 to 1928, he headed the Mechanization Section and concurrently served on the editorial board of Gornii Tekhnik. In 1924-1925, Chinakal was a member of a Soviet delegation of mining engineers who went to the U. S., Britain and Germany to study coal mining processes. From 1940 to 1944 he taught at the Kirov

Polytechnical Institute at Tomsk as a professor and Director of the Chair of Advanced Mining Construction. Since 1957, he has been Director of the U.S.S.R. Academy of Sciences Siberian Branch Institute of Mining. Chinakal was awarded the degree of Doctor of Technical Sciences without presenting a dissertation, and in February 1958, was elected to the U.S.S.R. Academy of Sciences as a Corresponding Member. He received a Stalin Prize for his shield system in 1942. Other awards include the Order of Lenin, the Order of the Red Banner of Labor, and a medal for "Valorous Work in the Great Patriotic War" (WWII). He has been a member of the Communist Party of the Soviet Union since 1944.

In the Kuzbas, Chinakal commenced work in 1930 on project administration, first as a deputy, and later as chief engineer of the planning administration of Kuzbassugol. In 1935, he formulated a scheme of shield reinforcement for the exploitation of the thick strata of precipitous slopes. The shield system of exploitation, suggested and introduced by Chinakal in close collaboration with the collective of coal mines and the Kuzbassugol Combine, was a contribution in the exploitation of thick precipitous coal strata. In 1943, as a member of the Government Commission, he took an active part in the organization of the West Siberian branch of the U.S.S.R. Academy of Sciences, and from 1944 was a permanent Director of the Mining and Geological Institute of the West Siberian affiliate of the Academy of Sciences. Chinakal has contributed 106 scientific works. His major works are devoted to questions on development and improvement of systems of utilization and mechanization of coal deposits.

Bibliography:

System of Exploitation with Shield Reinforcement. Moscow-Leningrad: 1943.

Light, non-sectional shield. Coal, 1954, #2.

Shield method of exploitation. Progressive Method Using Systems of Exploitation in the Kuzbas. Moscow: 1957.

and N. V. Marevich. Shield method of exploitation with gravity filling of worked-out space. Progressive Method Using Systems of Exploitation in the Kuzbas. Moscow: 1957.

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CHIZHIKOV, DAVID MIKHAILOVICH (Metallurgist)

D. M. Chizhikov was born November 17, 1895. In 1924 he graduated from the Moscow Mining Academy and subsequently worked at the copper electrolytic plant in Moscow and at a lead-zinc works in Vladikavkaz. From 1928 to 1930, he was chief engineer of the planning and construction of the Konstantinovskii Zinc Works in the Donbas. In 1930, he participated in the organization of the Scientific Research Institute of Non-Ferrous Metallurgy and was its first Director. From 1933 to 1941, he was a professor at the Moscow Institute of Non-Ferrous Metals and Gold. In 1939, he began working at the U.S.S.R. Academy of Sciences Institute of Metallurgy. He has been a member of the Communist Party of the Soviet Union since 1921. In 1939 he was elected a member of the U.S.S.R. Academy of Sciences. He was awarded Stalin Prizes in 1942 and 1950.

Bibliography:

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Chlorine Method and Processing of Polymetallic Ores and Concentrates. Moscow-Leningrad: 1936.

and G. S. Frents. Chlorine Method of Processing Tin Ores and Concentrates. Moscow-Leningrad: 1941.

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CHMUTOV, KONSTANTIN VASIL'EVICH (Physical Chemist)

K. V. Chmutov was born March 21, 1902. He graduated in 1928 from the Moscow Technological College. In 1930-51 he taught there and in other colleges. He began working in 1950, at the Institute of Physical Chemistry of the U.S.S.R. Academy of Sciences. In 1953 Chmutov was elected a Corresponding Member of the U.S.S.R. Academy of Sciences. He has been a member of the Communist Party of the Soviet Union since 1947.

The major work of Chmutov is the study of surface phenomena and of sorption processes.

As of 1961, Chmutov was Chairman of the Commission on Chromatography.

Bibliography:

and M. Dubinin. Physico-Chemical Basis of Gas Protection. Moscow: 1939.

Technics of Physico-Chemical Investigations. 3rd edition. Moscow: 1954.

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CHUFAROV, GRIGORII IVANOVICH (Physical Chemist)

G. I. Chufarov was born November 14, 1900. He graduated in 1928 from the Ural Polytechnic Institute. In 1931-36 he worked at the Ural Physico-Chemical Institute and in 1936-39 at the Ural Physico-Technical Institute. He was Director, in 1939-46, of the Institute of Chemistry of the Ural Branch of the U.S.S.R. Academy of Sciences. In 1946-56, he was Rector of the Ural University. As of 1962, he has been working at the Ural Branch of the U.S.S.R. Academy of Sciences. He has been a member of the Communist Party of the Soviet Union since 1939. In 1953 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences. He was a Deputy to the U.S.S.R. Supreme Soviet, fourth convocation.

The works of Chufarov are devoted to physico-chemical problems of metallurgical and related processes. He studied corrosion of metals in acids and the action of inhibitors and hot tinning, zincing, and decarbonization of ferrosilicon steel. Chufarov investigated the mechanism and kinetics of dissociation and reduction of metal oxides.

Bibliography:

Production of cast iron, iron, and steel by way of reducing carburized ores. Izvest. Akad. Nauk S.S.S.R., Otdel. Tekh. Nauk, 1946, #6.

and E. P. Tatievskaya. Absorption-catalytic theory of reducing oxides of metals. Problems of Metallurgy. Moscow: 1953.

and E. P. Tatievskaya. Mechanism and kinetics of reducing oxides of metals. Physico-Chemical Basis of the Blast Furnace Process and Contemporary Practice in Production of Cast Iron. Sverdlovsk: 1956.

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CHUKHANOV, ZINOVII FEDOROVICH (Heat Engineer)

Z. F. Chukhanov was born October 21, 1912. He graduated in 1932 from Moscow Chemical-Technological Institute. In 1931-1934 he worked in the All-Union Power Engineering Institute and in 1932-1937 in the State Institute of Nitrogen. He began working in 1938 at the Power Institute of the U.S.S.R. Academy of Sciences. In 1939 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences. He has been a member of the Communist Party of the Soviet Union since 1944.

Chukhanov studied the theory of burning and vaporization of solid fuels and worked out new complex methods in the utilization of fuels. He has also studied heat exchange and diffusion.

Bibliography:

and M. K. Grodzovskii. Process of vaporization of fuel.

Doklady Akad. Nauk S.S.S.R., New Series, 1934, 3, #5.

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Energo-Technological Utilization of Fuel. Moscow: 1956.

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CHUKHROV, FYODOR VASIL'YEVICH (Geochemist)

F. V. Chukhrov was born July 15, 1908. He graduated from the Moscow Geological Survey Institute in 1932. Since 1936, he has been working at the U.S.S.R. Academy of Sciences Institute of Geological Sciences where he became deputy Director in 1950. In 1955, he became Director of the U.S.S.R. Academy of Sciences Institute of Geology of Ore Deposits, Petrography, Mineralogy and Geochemistry. He has been a member of the Communist Party of the Soviet Union since 1953. In that year he was also elected to the U.S.S.R. Academy of Sciences as a Corresponding Member.

Chukhrov has made mineralogical and geochemical investigation of ore deposits of Kazakhstan, studied colloids of the earth's crust, and the mineralogy of oxidized ozone.

In 1950 he was the recipient of a Stalin Prize.

Bibliography:

Colloids in the Earth's Crust, 2nd ed. Moscow: 1955.

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Oxidized Zone of Sulphide Deposits of the Kazakhstan Steppe Region. Moscow: 1950.

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DANILOV, STEPAN NIKOLAEVICH (Organic Chemist)

S. N. Danilov was born January 6, 1889. He was a student of A. E. Favorskii (1860-1945, organic chemist). In 1914 he graduated from Petersburg University, where from 1915 he taught and subsequently became a professor. He was made professor at the Leningrad Technological Institute in 1930. In 1949 he became Chief of the Laboratory at the Institute of High Molecular Compounds of the U.S.S.R. Academy of Sciences. Since 1943, Danilov has been a Corresponding Member of the

U.S.S.R. Academy of Sciences. He became editor, in 1946, of the Journal of General Chemistry (Zhur. Obschei Khim.).

Danilov discovered that aldehydes of the chain and cyclical construction with secondary and tertiary radicals can be isomerized into ketones. He established that oxy-aldehydes under the influence of catalysts are isomerized into oxy-ketones and into monocarboxylic acids. These investigations elucidated some biochemical processes such as the transformation of sugars. Danilov worked out new methods of obtaining ethyl cellulose. He conducted investigations in the area of analysis, stabilization, and transformation of viscose.

Bibliography:

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and A. M. Gakhokidze. Isomerization of oxyaldehydes. VI—Saccharinic rearrangement of mannose. Zhur. Obschei Khim., 1936, 6, #5.

Biography:

V. V. Razumovskii. Corresponding member of the U.S.S.R. Academy of Sciences S. N. Danilov (On the 60th Anniversary Since the Date of Birth). Priroda, 1949, #4.

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DELONE, BORIS NIKOLAEVICH (Mathematician)

B. N. Delone was born in Leningrad March 15, 1890. He graduated from Kiev University in 1913 where he was a pupil of V. P. Ermakov (1845-1922, mathematician), and D. A. Grave (1863-1939, mathematician). In 1934, he was awarded the degree of Doctor of Physical-Mathematical Sciences. He became a professor in 1926. He was employed at Kiev University from 1913 to 1916, and at Kiev Polytechnic Institute from 1916 to 1922. He has been a professor at Moscow University since 1935, and since 1932, has been employed at the U.S.S.R. Academy of Sciences Institute of Mathematics. In 1929 he became a Corresponding Member of the U.S.S.R. Academy of Sciences.

On number theory Delone obtained a solution in whole numbers of indefinite equations of the third power, with two unknowns. His geometric works are concerned with a theory of

G. F. Voroni, the correct breaking up of a space, the geometry of numbers, and mathematical crystallography. Delone presented an important method in structural analysis of crystals. He has been concerned with geometrizing the theories of Galois.

Bibliography:

and D. K. Faddeev. Theory on Irrationality of the Third Power. Moscow-Leningrad: 1940.

and A. D. Aleksandrov. Mathematical Basis in Structural Analysis of Crystals and Determination of the Basic Repeating Parallelepiped with the Use of X-rays. Moscow-Leningrad: 1934.

Petersburg School of Number Theory. Moscow-Leningrad: 1947.

Biography:

On the 60th Anniversary of Boris Nikolaevich Delone. Izvest. Akad. Nauk S.S.S.R., Mat. Ser., 1950, 14, #4. (contains bibliography of the works of Delone).

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DERYAGIN, BORIS VLADIMIROVICH (Physical Chemist)

B. V. Deryagin was born August 4, 1902. In 1922 he graduated from Moscow University. He was appointed, in 1935, Chief of the Laboratory of Surface Forces at the Institute of Physical Chemistry of the U.S.S.R. Academy of Sciences.

Deryagin studied properties of thin layers of liquids. He discovered (together with M. M. Kusakov) the "unwedging action" of these layers. He proposed a theory of coagulation of dispersed systems by electrolytes (1935-41) and the theory of agglomeration of solid particles. He investigated the mechanism of lubrication by thin layers and boundaries. He worked out the molecular theory of external friction of solid bodies (1933-34) and (together with N. A. Krotova) the electric theory of adhesion.

Deryagin became a Corresponding Member of the U.S.S.R. Academy of Sciences in 1946.

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DEVYATKOV, NIKOLAI DMITRIEVICH (Electronic Engineer)

N. D. Devyatkov was born April 11, 1907. He graduated from the Leningrad Polytechnical Institute in 1931. In 1925 he worked at the U.S.S.R. Academy of Sciences Physico-Technical Institute and subsequently in a number of other scientific research institutes. In 1954, he became head of a scientific research institute and also the Department of Ultra-High Frequency Electronics at the U.S.S.R. Academy of Sciences Institute of Radio Engineering and Electronics. Since 1944 he has been teaching at the Moscow Institute of Energy. He became a Corresponding Member of the U.S.S.R. Academy of Sciences in 1953.

Devyatkov has studied the gaseous discharge, the construction of gaseous discharge devices for protecting lines of communication from over voltage and acoustic shock, and also gaseous discharge devices for modulated radiation in the infra-red part of a spectrum. He has worked out ultra high frequency devices for detecting, generating and converting frequencies of

electromagnetic oscillations in range from decimetric to millimetric wave lengths.

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DIKUSHIN, VLADIMIR IVANOVICH (Machine-tool Engineer)

V. I. Dikushin was born July 26, 1902. In 1928 he graduated from the Moscow Higher Technical School and in 1932 began working at the Experimental Scientific Institute of Metal Cutting Machines. He became a Corresponding Member of the U.S.S.R. Academy of Sciences in 1943, and in 1953 Academician. In 1941 and again in 1951 he received a Stalin Prize.

Dikushin's scientific works are devoted to basic problems of machine tool design, in particular to working out scientific bases of metal cutting machine design. Under Dikushin's direction, systems were worked out for the assembly line work of machine tools and of standard machines for handling rotating bodies in automatic lines. Dikushin is the head of the first engineering project in the U.S.S.R. for automatic production.

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Biography:

Dikushin Vladimir Ivanovich. *Vestnik Akad. Nauk S.S.S.R.*, 1954, #4.

I. I. Petrov. Vladimir Ivanovich Dikushin (On his 50th birthday and his 25th year of scientific activity). *Telemekhanika i Avtomat*, 1953, 14, #3.

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DOLGOPLOSK, BORIS ALEKSANDROVICH (Organic Chemist)

B. A. Dolgoplosk was born November 12, 1905. He graduated in 1931 from Moscow University. In 1932-46 he worked at synthetic rubber plants. He taught at the Yaroslavl' Technological Institute in 1944-46 and in 1945 became professor there. In 1946 he began work in the All-Union Scientific Research Institute of Synthetic Rubber and also, in 1948, at the Institute of High Molecular Compounds of the U.S.S.R. Academy of Sciences. Dolgoplosk has been a member of the Communist Party of the Soviet Union since 1945. He was elected in 1958 a Corresponding Member of the U.S.S.R. Academy of Sciences. In 1941 and 1949 he received Stalin Prizes and in 1947 the S. V. Lebedev Prize.

Dolgoplosk has studied the polymerization processes and their practical application. He investigated the initiation of radical processes under the influence of oxidizing-reducing reactions. He also studied reactions of free radicals in solutions, the determination of the connection between the structure of the radicals and their relative reaction ability, and the determination of the mechanism of initiating and inhibiting radical processes. In catalytic polymerization, Dolgoplosk ascertained the role of complex formation during polymerization under the influence of lithium - organic compounds. Dolgoplosk conducted a series of investigations on the connection between the structure and the properties of rubber and developed methods of obtaining new types of rubber. He completed work on the synthesis of carboxylic rubber, obtaining from it properties close to those of natural rubber.

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DOLLEZHAL, NIKOLAI ANTONOVICH (Power Engineer)

N. A. Dollezhal was born October 15, 1899. Upon graduating from Moscow Higher Technical School (MVTU), he became engaged in designing thermopower installations. From 1932 to 1934, he was Technical Director of the Institute of Nitrogen Machine Building. In 1935-1938, he was Chief Engineer of the "Bolshevik" Plant in Kiev. He was Director of the Scientific Institute of Chemical Machine Building in Moscow from 1942 to 1953. In 1923, he taught at the Institute of the National Economy in Moscow as well as at the Moscow Higher Technical School. He was awarded a Stalin Prize in 1952, and a Lenin Prize in 1957. In 1953, he was elected to the U.S.S.R. Academy of Sciences as a Corresponding Member, and in June 1962, an Academician.

Dollezhal has planned steam power plants and designed compressing machines for the chemical industry. He worked out the theory of self-acting valves of reciprocating compressors. He is working in nuclear energy in the above-mentioned cities, and was the chief designer of the reactor installed in the first atomic electric power station in the U.S.S.R.

Dollezhal visited the United States on a Nuclear Scientists Exchange program in New York City November 1959.

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DORODNITSYN, ANATOLII ALEKSEEVICH (Hydrodynamicist)

A. A. Dorodnitsyn was born December 2, 1910. In 1931 he graduated from the Groznenskii Petroleum Institute. Since 1936 he has been teaching and carrying out work in higher educational and scientific institutions of Moscow and Leningrad. He started working in 1941 at the Central Aerodynamic Institute. From 1944 to 1955 he worked at the Mathematical Institute of the U.S.S.R. Academy of Sciences, and in 1955, he was appointed Director of the Computer Center of the U.S.S.R. Academy of Sciences now the Institute of Cybernetics. Dorodnitsyn was made professor in 1947 at the Moscow Physico-Technical Institute. He has been an Academician of the U.S.S.R. Academy of Sciences since 1953. In 1946, in 1947, and in 1951, he was awarded Stalin Prizes.

The investigations of Dorodnitsyn deal with problems of dynamic meteorology, aerodynamics, and applied mathematics. His study of the influence of uneven land surfaces on air streams is very important. He explained theoretically the formation of descending currents over mountain ridges. He is concerned with a study of boundary strata in compressible gas and supersonic flows of compressible gas; he also studied asymptotic behavior of derivatives of several classes of non-linear differential equations.

As of 1961, Dorodnitsyn was Chairman of the Commission on Computing Techniques of the U.S.S.R. Academy of Sciences.

In June 1958, Dorodnitsyn visited the United States to attend a Conference on Digital Computers at Michigan University.

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DUBININ, MIKHAIL MIKHAILOVICH (Physical Chemist)

M. M. Dubinin was born December 20, 1900. In 1921 he graduated from a technical institute in Moscow and began teaching there. He was a pupil of N. A. Shilov (1872-1930, outstanding physical chemist in catalysis and surface adsorption).

Dubinin taught at the Military Academy of Chemical Defense in 1932 and became a professor there in 1933. From 1946 to 1950 he was President of the All-Union D. I. Mendeleev Chemical Society. He was made Chief of the Sorption Processes Laboratory at the Institute of Physical Chemistry of the U.S.S.R. Academy of Sciences in 1946. Since 1943 he has been an Academician of the U.S.S.R. Academy of Sciences. And from 1948 to 1957 he was Secretary-Academician of the Division of Chemical Sciences at the U.S.S.R. Academy of Sciences. In 1942 and in 1950 he was awarded Stalin Prizes. In 1961, he was awarded the Red Banner of Labor.

Since 1925 Dubinin has studied phenomena of absorption of gases, vapors and dissolved substances by porous solids. He proposed new methods of preparation of pure activated charcoal. These samples helped him study adsorption and formation of surface oxides of the acid type. They also helped him to develop the basis for charcoal porosity characteristics. Dubinin determined the mechanism of vapor absorption as a function of the porosity factor of the absorbent structure. From 1932 to 1935 he investigated gas and vapor absorption from an air stream which passes through a bed of granular absorbent. He also developed basic concepts of vapor mixture absorption and devised methods and designed equipment for vapor mixture separation. In 1936 and 1937 he studied the effect of absorbent ultraporosity on vapor absorption of substances with different molecule sizes. Since 1940 Dubinin has worked on scientific and practical problems of chemical defense. Since 1946 Dubinin and his co-workers have been successfully investigating the dependence of sorption qualities of activated charcoals on their structure and of vapor absorptivity on its physical properties. Dubinin and his associates classified structural types of absorbents.

As of 1961, Dubinin was a Member of the Presidium of the U.S.S.R. Academy of Sciences.

Dubinin has attended the Pugwash Conferences.

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DUBININ, NIKOLAI PETROVICH (Biologist)

N. P. Dubinin was born January 1907. He has worked at the Moscow Zootechnical Institute where he became a professor in 1935. From 1932 to 1948, he worked at the U.S.S.R. Academy of Sciences Institute of Cytology, Histology and Embryology, and at the Forestry Institute from 1949-1955. He has been working at the Institute of Biophysics since 1955. He was elected, in 1946, a Corresponding Member of the U.S.S.R. Academy of Sciences.

Dubinin's basic work is in genetics, cytogenetics, genetic principles of selectivity, and the theory of evolution.

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DUKHOV, NIKOLAI LEONIDOVICH (Mechanical Engineer)

N. L. Dukhov was born October 13, 1904. Upon graduating from the Leningrad Polytechnical Institute in 1932, he worked as a designer at the Leningrad Plant, and in 1941 at the Chelyabinsk Plant. He was awarded the title Hero of Socialist Labor, and became a member of the Communist Party of the Soviet Union in 1941. In 1953, he was elected to the U.S.S.R. Academy of Sciences as a Corresponding Member.

The basic works of Dukhov deal with the development of new designs.

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DUMANSKII, ANTON VLADIMIROVICH (Colloidal Chemist)

A. V. Dumanskii was born April 20, 1880. He is one of the founders of colloidal chemistry in Russia. He graduated in 1903 from Kiev Polytechnical Institute where, until 1913, he conducted his investigations. In 1913 he organized in Voronezh a Laboratory of Colloidal Chemistry which was reorganized in 1932 into the All-Union Scientific Research Institute of Colloidal Chemistry. Until 1942 he was Director of this Institute. In 1946 he became Director of the Institute of General and Inorganic Chemistry, Ukrainian S.S.R. Academy of Sciences. Dumanskii has been a Corresponding Member of the U.S.S.R. Academy of Sciences since 1933, and since 1945 an Academician of the Ukrainian S.S.R. Academy of Sciences. He is the founder and editor, since 1935, of the Colloidal Journal.

While studying dispersed, chiefly colloidal systems, Dumanskii introduced physical methods for research in colloidal chemistry. He observed an increase in the concentration of salts with the introduction of gelatin to their solution, which was helpful subsequently in explaining the role of water, bound to colloidal particles. Instead of using animal membranes for investigating the properties of a medium surrounding colloidal particles (a dispersed medium), Dumanskii introduced, in 1908, the use of collodion membranes, later widely utilized in chemistry and biology. He introduced the use of a powerful centrifuge for measuring the size of colloidal particles. Dumanskii's widespread investigations in the utilization of physico-chemical

diagrams (allowing to clearly outline the conditions of sedimentation and formation of colloidal solutions) in colloidal systems had considerable practical significance. The works of Dumanskii, and his students on the solvation of colloidal systems lead to considerable changes in the theory under question and in the technology of a number of fields in practical colloidal chemistry (agronomy, sugar, fermentation, starch-molasses, bread baking and other industries).

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DZHELEPOV, BORIS SERGEEVICH (Physicist)

B. S. Dzhelepov was born December 12, 1910. He graduated from Leningrad University in 1931, and from then until 1943, he worked at the Physico-Technical Institute of the U.S.S.R. Academy of Sciences. In 1935-1941 and again in 1944, he taught at Leningrad University. He worked in 1939-1941 and also in 1946 at the All Union Scientific Research Institute of Metrology.

Beginning in 1945, Dzhelepov has worked at the Radium Institute of the U.S.S.R. Academy of Sciences. He was elected, in 1953, a Corresponding Member of the U.S.S.R. Academy of Sciences.

Dzhelepov's field is nuclear physics. In 1932-41 he studied the energy spectra of electrons emitted by artificially created radioactive elements. In 1938 he designed a gamma spectrometer, based on pair formation. In 1948, together with Orbeli, he developed a gamma spectrometer, based on the measurement of recoil electron energy knocked out by gamma rays in the direction of its initial movement. In 1954 this method was improved and a new device was built. Dzhelepov and associates studied beta and gamma spectra and spectra of conversion electrons of more than thirty radioactive isotopes. Together with N. A. Vlasov, he studied the angular distribution of quanta formed during positron annihilation, which permitted the evaluation of the velocities of positrons at which they are annihilated in solid bodies. Dzhelepov analysed data on beta disintegration, on mirror nuclei, and on isotopic spin.

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ELISEEV (YELISSEEV), NIKOLAI ALEKSANDROVICH (Geologist & Petrographer)

N. A. Eliseev was born December 19, 1897. He graduated in 1924 from Leningrad University. In 1938-47 he was professor at Leningrad Mining Institute and in 1947 became professor at Leningrad University. He has also been working, beginning in 1949, in the Laboratory of Precambrian Geology of the U.S.S.R. Academy of Sciences. Since 1953 he has been a Corresponding Member of the U.S.S.R. Academy of Sciences.

Eliseev's field of work is the petrography of ore on the Altai, Kol'skii Peninsulas, Krivoi Rog, and also the methodology of petrographic investigations.

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ELYUTIN, VYACHESLAV PETROVICH (Metallurgist)

V. P. Elyutin was born 1907. In 1930 he graduated from the Moscow Institute of Steel. He has been working at the Moscow Institute of Steel, and from 1945 to 1951 he was Director of this Institute. He holds the degree of Doctor of Technical Sciences, and in 1947 he became a professor. He has been a member of

the Communist Party of the Soviet Union since 1929. From 1951 to 1954 he was Deputy Minister and from 1954 to 1959 U.S.S.R. Minister of Higher Education. In 1959 he became Minister of Higher and Middle Special Education. Elyutin was a delegate to the Supreme Soviet of R.S.F.S.R. Fourth Convocation in 1958. He had been a Member Candidate of the Central Committee of the Communist Party of the Soviet Union since 1956, and in 1961 he became a Member. Elyutin is Deputy Chairman of the Committee for Lenin Prizes for Science and Technology and of the Soviet Chinese Friendship Society. He was awarded a Stalin Prize in 1952, Order of Lenin in 1957, Red Banner of Labor, and two Badges of Honor. In 1959 Elyutin accompanied Nikita Khrushchev to the United States. He was elected a Corresponding Member of the U.S.S.R. Academy of Sciences in 1962.

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EMANUEL', NIKOLAI MARKOVICH (Physical Chemist)

N. M. Emanuel' was born October 1, 1915. After graduating from the Leningrad Polytechnical Institute in 1938, he worked at the Institute of Chemical Physics of the U.S.S.R. Academy of Sciences. In 1944 he began teaching at Moscow University and in 1950 became a professor there. Emanuel' has been a member of the Communist Party of the Soviet Union since 1948. In 1958 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences. He was awarded the A. N. Bakh Prize in 1948, and in 1958 the Lenin Prize for investigating the properties and peculiarities of chain reactions.

The main works of Emanuel' are in the field of chemical kinetics. He discovered the formation of intermediate products of a free radical type in slow chain reactions of oxidation, and developed a kinetic method of investigating these products, thus confirming a number of important rules of the chain theory. He also worked on intramolecular hydrogen bonding. He discovered a new mechanism of homogeneous catalysis in hydrocarbon oxidation reactions, the peculiarities of negative

catalysts when introduced during various stages of chain reactions. Emanuel' proposed methods for controlling complex chain reactions by changing the conditions during the process. He developed a number of methods for stimulating slow, branching chain reactions, utilizing the capability of these processes for self-support and self-acceleration. The investigations of Emanuel' are of significance for improving and creating new processes in Soviet chemical technology. Recently Emanuel' has used concepts of chemical kinetics for the study of pathological processes such as the development and inhibition of malignant tumor.

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EMEL'YANOV, VASILII SEMENOVICH (Metallurgist)

V. S. Emel'yanov was born February 12, 1901. Upon graduating from the Moscow Mining Academy in 1928, he worked there until 1931. In 1935 he started working on various important projects in industry and personnel. From 1940 to 1946, he worked as a Deputy Chairman and Chairman of the U.S.S.R. Council of People's Commissars Council on Standards. In 1957-60, he was Chief of the Main Administration on the Use of Atomic Energy under the USSR Council of Ministers. He became, June 1960, Chairman of the State Committee of the USSR Council of Ministers on the Use of Atomic Energy, and in 1962 he was made Deputy Chairman of that Committee. He has been the representative of the Soviet Union at UN discussions on Atomic Energy, and the chief delegate of the U.S.S.R. at the International Atomic Energy Agency in Vienna. He was a recipient of a Stalin Prize in 1942 and in 1950, and in 1954 Hero of Socialist Labor. Since 1919 he has been a member of the Communist

Party of the Soviet Union. He was elected, in 1953, a Corresponding Member of the U.S.S.R. Academy of Sciences. He has participated in the Pugwash Conferences.

Emel'yanov's main scientific work deals with developing new grades of steel, technology of producing armor, study of the role of nitrogen and other gases in special steel and ferroalloys. Under the direction of Emel'yanov, new electric furnaces for smelting of steel and ferroalloys were developed, the technology was worked out and high grade ferroalloys were introduced in industry.

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ENGEL'GARDT, VLADIMIR ALEKSANDROVICH (Biochemist)

A. V. Engel'gardt was born December 3, 1894. In 1919 he graduated from Moscow University. From 1929 to 1933 he was professor at the University of Kazan' and the Kazan' Medical Institute and from 1934 to 1940 professor at Leningrad University. He was made professor at Moscow University in 1936. Beginning in 1933, he worked in departments of the U.S.S.R. Academy of Sciences: in 1935, Chief of the Laboratory of Biochemistry of the Animal Cell at the Institute of Biochemistry, 1944-50 at the Institute of Physiology. He was Chairman of the Department of Biochemistry of the Institute of Experimental Medicine at the U.S.S.R. Academy of Medical Sciences from 1945 to 1952. From 1955 to 1960 he was Academician-Secretary of the Department of Biological Sciences of the U.S.S.R. Academy of Sciences. Engel'gardt was elected Corresponding Member of the U.S.S.R. Academy of Sciences in 1946 and Academician in 1953. Since 1944 he has also been a member of the U.S.S.R. Academy of Medical Sciences. He was made chief editor of the journal Biochemistry in 1944. He is a member of many domestic and foreign scientific societies. For

investigations of muscle activity, he (with M. N. Lyabimova) was awarded in 1943 a Stalin Prize.

Engel'gardt's main investigations are devoted to the study of the regularities in the transformation of organic phosphorous compounds in processes of cellular metabolism, their role in the exchange of energy and in the physiological functioning of the cell, the study of the interrelation of energy processes and the mechanical reaction of muscle protein. His investigations aided the establishment of definite ties between chemical phenomena in the muscle fiber and its function. Engel'gardt discovered the process of aerobic resynthesis of adenosine triphosphoric acid. He established that the contracting protein of the muscle, myosin, has the properties of an adenylypyrophosphatase enzyme and by splitting the adenosine triphosphoric acid, obtains energy for its functioning. Engel'gardt also investigated vitamins, and studied the technology for vitamin production and their quantitative determination.

As of 1961, Engel'gardt was Chairman of the U.S.S.R. Academy of Sciences Presidium Commission on Radiobiology, and Director of the Institute of Radiation and Physico-Chemical Biology of the U.S.S.R. Academy of Sciences.

In September 1958, he visited the United States to attend the 8th General Assembly of Scientific Union in Washington, D. C., and January 1959, he visited the University of California at Berkeley.

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EYKHFEL'D, IOGAN GANSOVICH (Botanist)

I. G. Eykhfel'd was born January 25, 1893. Upon graduation from the Petrograd Agricultural Institute, he became Director of the Polar Division (Murmansk Territory) of the All-Union Institute of Plant Growing from 1923 to 1940 (until 1930, known as the All-Union Institute of Applied Botany and New Cultures). From 1940-1951, he was Director of the Institute at Leningrad. In 1950 he became President of the Estonian S.S.R. Academy of Sciences. In 1953 he was awarded the title Honored Scientist of the Estonian S.S.R., and has been a member of the Lenin All-Union Academy of Agricultural Sciences since 1935. He became an Academician of the Estonian S.S.R. Academy of Sciences in 1946 and was elected to the U.S.S.R. Academy of Sciences as a Corresponding Member in 1953. In 1942, he was awarded a Stalin Prize. He was a deputy to the third and fifth convocations of U.S.S.R. Supreme Soviet, and was elected again March 1962.

Eykhfel'd is a specialist in the field of Polar plant cultivation and agriculture. He aided a study on moving agricultural cultures into the Northern regions of the country and proved the possibility of creating a vegetable and feed base in severe climatic environments of the Kola Peninsula and the Northern part of the Karelian A.S.S.R. He conducted work on the study and selection of a special set of early ripening cultures for the far North, and of utilizing Khibin rocks as mineral fertilizer, and presented an outline of field cultures of Scandinavia.

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FEDOROV, SERGEI FILIPPOVICH (Geologist)

S. F. Fedorov was born July 13, 1896. He graduated from the Moscow Mining Academy in 1924. From 1934 to 1954, he was a professor at the Moscow Oil Institute. Since 1934, he has been working at the U.S.S.R. Academy of Sciences. Since 1920 he has been a member of the Communist Party of the Soviet Union. He became a Corresponding Member of the U.S.S.R. Academy of Sciences in 1939. In 1950 and 1952 he received Stalin Prizes. In 1952 the U.S.S.R. Academy of Sciences awarded him the I. M. Gubkin Prize.

Fedorov studied mud volcanism and the genetic connection of mud volcanos to oil deposits.

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FEDEROV, YEVGENII KONSTANTINOVICH (Geophysicist)

Ye. K. Federov was born April 10, 1910. In 1932 he graduated from Leningrad University. He worked as a magnetologist in Polar stations on the Land of Franz and Joseph in 1932-33 and on the Cape of Chelyuskin in 1934-35. As a geophysicist-astronomer in 1937-38, he participated in the operations of the first Soviet drifting scientific station, "North Pole-1." From 1939 to 1947 he was in charge of the Hydrometeorological Service of the U.S.S.R. Council of Ministers. Federov worked from 1947 to 1955 at the Institute of Applied Geophysics of the U.S.S.R. Academy of Sciences and in 1955 became Director of that Institute. He became a member of the Communist Party of the Soviet Union in 1938. In 1939 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences and in 1960 an Academician. Also in 1960 he became Chief Scientific Secretary of the U.S.S.R. Academy of Sciences Presidium; however, in December 1962 it was announced that Federov was relieved of his position of Chief Scientific Secretary of the Presidium of the Academy of Sciences and reassigned as Chief of the U.S.S.R. Council of Ministers Main Administration of Hydrometeorological Services. He has been Chairman of the Soviet delegation of Experts on Control of Atomic Tests. In 1938 he was made a Hero of the Soviet Union.

His main investigations are concerned with magnetology, meteorology and practical astronomy.

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FEDOROV, YEVGRAF YEVGRAFOVICH (Climatologist)

Ye. Ye. Fedorov was born Nov. 8, 1880. He graduated from the University of Petersburg in 1910. From 1911 to 1934, he worked at the Magneto-Meteorological Observatory in Pavlovsk, and from 1934 to 1951, at the U.S.S.R. Academy of Sciences Institute of Geography. He became a Corresponding Member of the U.S.S.R. Academy of Sciences in 1946.

Fedorov's main works are concerned with the study of cloud and solar radiation. He also developed methods for studying climate by means of simultaneous observation of temperature, humidity, etc.

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Ya. I. Fel'dman. Yevgraf Yevgrafovich Fedorov (On the occasion of the 75th year since the date of birth). Izvest. Akad. Nauk S.S.S.R., Ser. Geogr., #1 (1956).

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FERDMAN, DAVID LAZAREVICH (Biochemist)

D. L. Ferdman was born January 7, 1903. He graduated in 1925 from Khar'kov University. He began working in 1928 at the Institute of Biochemistry of the Ukrainian S.S.R. Academy of Sciences. In 1944, he became professor at Kiev University. He was elected a Corresponding Member of the Ukrainian S.S.R. Academy of Sciences in 1939, and in 1946 a Corresponding Member of the U.S.S.R. Academy of Sciences.

Investigations of Ferdman and his associates are devoted to the study of muscle chemistry, especially phosphorous compound metabolism and the formation and elimination of ammonia, and to the biochemistry of diseased muscles. They ascertained the presence of glutamine in the tissues of animals and studied its role.

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FESENKOV, VASILII GRIGOR'EVICH (Astrophysicist)

V. G. Fesenkov was born January 13, 1889. In 1911 he graduated from Khar'kov University. He is a member of many committees of the International Astronomical Union. In 1927 he became a Corresponding Member of the U.S.S.R. Academy of Sciences and in 1935 an Academician. Since 1946 he has been a member of the Kazakh S.S.R. Academy of Sciences, and a Member of the Presidium of Kazakh Academy of Sciences as of 1961.

Fesenkov's research deals with the physical properties of planets, meteors, physics of the sun and stars, evolution of stars, and the structure of gas and dust nebulae. He studied the structure of galaxies, cosmogony, celestial mechanics, and optics of the atmosphere. Fesenkov pioneered in the photometric investigation of the zodiac light and formulated a dynamic theory of zodiac light. He also investigated twilight of our atmosphere, the structure of the atmosphere, the brightness

of the sky during the day, and the luminescence of the sky during the night. He introduced a hypothesis of corpuscular photogenesis of stars and developed a criterion of the influx stability of celestial bodies, thus explaining the peculiar structure of the solar system and the formation and evolution of galactic nebulae. Fesenkov also advanced the hypothesis of star formation from the interstellar gas and dust medium. He is the author of numerous popular publications in the field of cosmogony.

As of 1961, Fesenkov was Chairman of the U.S.S.R. Academy of Sciences Committee on Meteorites and Director of the Astrophysical Institute of Kazakh S.S.R. Academy of Sciences.

Bibliography:

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FLEROV, GEORGII NIKOLAEVICH (Physicist)

G. N. Flerov was born March 2, 1913. After graduating from the Leningrad Industrial Institute, he worked at the Leningrad Physico-Technical Institute. From 1944 he worked in several departments of the U.S.S.R. Academy of Sciences, and is working at the Joint Institute of Nuclear Research. In 1953 Flerov was elected a Corresponding Member of the U.S.S.R. Academy of Sciences. He has been a member of the Communist Party of the Soviet Union since 1955. In 1946 he was awarded a Stalin Prize.

Flerov works in nuclear physics and cosmic rays. He investigated the energy dependence of cross section radiative-capture of slow neutrons. In 1940, with L. I. Rusinov, Flerov showed that during nuclear fission there is emission of secondary neutrons. In the same year, together with K. A. Petrzhak,

he discovered the phenomena of spontaneous fission of heavy nuclei. He discovered nuclear fission under influence of a neutral component of cosmic rays.

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FLORENISOV, NIKOLAI ALEKSANDROVICH (Geologist)

N. A. Florensov was born in 1909. In 1936, he graduated from the Irkutsk State University, where he was an assistant from 1937-38, senior instructor 1938-40, a docent and departmental chairman 1940-56, and from 1956 to 1959, a professor and departmental chairman. From 1945 to 1947, he was also the Chief Geologist of the Irkutsk Geological Administration. In 1949 he also began work at the Eastern-Siberian branch of the U.S.S.R. Academy of Sciences, and in 1959 became the director of the division on regional geology of the U.S.S.R. Academy of Sciences East-Siberian Geological Institute. Florensov was awarded the title of Honored Scientist and Technologist by the Buryat A.S.S.R. in 1959, and in 1960 was made a Corresponding Member of the U.S.S.R. Academy of Sciences.

Florensov's work has been in the field of East-Siberian tectonics and neotectonics.

Bibliography:

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FOCK, VLADIMIR ALEXANDROVITCH (Theoretical Physicist)

V. A. Fock was born December 22, 1898. In 1922 he graduated from Petrograd University and remained there for further study, becoming a professor in 1932. He worked at the following institutions: the State Institute of Optics (1919-23, 1928-41), the Leningrad Institute of Physics and Technology (1924-36), and the Institute of Physics of the U.S.S.R. Academy of Sciences (1934-41, 1944-53). In 1954 he was appointed to the staff of the Institute of Physical Problems of the U.S.S.R. Academy of Sciences. Fock became a Corresponding Member of the U.S.S.R. Academy of Sciences in 1932 and in 1939, an Academician. He was awarded, in 1946, a Stalin Prize, and a Lenin Prize in 1960. As of 1960, he was still teaching at Leningrad University. In April 1959, he visited the United States to attend Harvard University as a Leningrad exchange scientist. In 1958 he was elected a Foreign Member of the Norwegian Royal Society in Trondheim.

The basic research of Fock deals with quantum mechanics, quantum electro-dynamics, the theory of electromagnetic diffraction and radio-wave propagation, the general theory of relativity, mathematics, and mathematical physics. His early work is devoted to mechanics of elastic bodies and to theoretical optics. In 1924 he established basic concepts of the theory of the illumination vector in the optical field. Fock's most important contribution to mechanics is the solution of two-dimensional static problems in the theory of elasticity. This he carried out using the integral equation of Fredholm. In 1926

Fock worked out a theoretical approach to the wave equation of quantum mechanics for a charged particle in a magnetic field, proving for the first time its "gauge-invariant" properties. As a consequence of the above investigation Fock arrived at the scalar relativistic wave equation for a particle with no spin in an electromagnetic field, independently of similar work by the Swedish physicist O. Klein. This equation is often referred to as the Klein-Fock equation. In 1930 Fock derived from a variational principle the equations of the self-consistent field in the quantum theory of the atom, taking due account of the symmetry properties of the wave function; he developed an approximation method for determining the energy states and transition probabilities of polyelectronic atoms. The method is also used in the theory of molecular structure and in the theory of solids. Fock's most important contributions to the field theory are investigations in second quantization and quantum electrodynamics. In 1932 and 1934 Fock developed a method permitting a quantum description of systems with a variable number of Bose particles (e.g. photons); he uses a functional, dependent on an infinite set of wave functions in spaces of increasing number of dimensions (Fock space) and on an auxiliary function (the field variable). In 1939 Fock solved Einstein's gravitational equations for an "insular" distribution of masses (like the Solar system), proving that gravitation equations also include equations of motion. In his monograph "The theory of space, time and gravitation" (1955) Fock interprets Einstein's gravitation theory from his own point of view, drawing a sharp distinction between the physical principle of relativity and the mere co-variance of differential equations; he also insists on the importance of the idea of unity between metric and gravitation, as opposed to the idea of relativity of motion, which is of limited application only (according to Fock, a general principle of relativity does not exist). Fock's other scientific achievements are in the integral equations, the various applications of conformal representation, the theory of the puncture of dielectrics, the methods based on electricity to detect mineral resources, the theory of core sampling by electrical means, and the theory of diffraction of radio-waves. He also published a number of papers on the interpretation of quantum mechanics.

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FOTIADI, EPAMINOND EPAMINONDOVICH (Geophysicist)

E. E. Fotiadi was born January 23, 1907. He graduated from Leningrad University in 1933. From 1927 to 1939, he worked in the Emba Oil Trust, and in 1946 at the Scientific Research Institute of Geophysics. In 1951 he worked at the All-Union Scientific Institute of Geophysical Methods for Prospecting. Since 1958, he has been working at the U.S.S.R. Academy of Sciences Institute of Geology and Geophysics of the Siberian Branch where he is Deputy Director. He has been a member of the Communist Party of the Soviet Union since 1945. In 1958 he was elected to the U.S.S.R. Academy of Sciences as a Corresponding Member.

Fotiadi has worked on geophysical methods of prospecting for oil deposits, and the geological explanation of gravity and magnetic anomalies. He is the author of manuals and instructions for gravimetric and topogeodesic work. He has compiled summaries on geophysical data on the Southern part of Emba territory, and has studied the structure of crystalline base and associated sedimentary cover of the Russian platform.

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FRANK, GLEV MIKHAILOVICH (Biophysicist)

G. M. Frank was born May 24, 1904. He graduated from Crimean University in 1925. In 1929 he worked at the Physico-Technical Institute in Leningrad and subsequently at the All-Union Institute of Experimental Medicine and at the U.S.S.R. Academy of Medical Sciences. He began working at the U.S.S.R. Academy of Sciences in 1943. From 1946 to 1948 he was Chief of the Radiation Laboratory of the U.S.S.R. Academy of Sciences. In 1948 he was on the staff of the U.S.S.R. Academy of Medical Sciences Biophysics Institute where he became laboratory Chief in 1953 to 1958, acting Director, then Director, in 1958. Frank became a Corresponding Member of the U.S.S.R. Academy of Medical Sciences in 1945, and in 1960 a Corresponding Member of the U.S.S.R. Academy of Sciences. He has been a member of the Communist Party of the Soviet Union since 1947. In 1949 and 1951 he was awarded a Stalin Prize.

Frank investigated the effect of ultra-violet and ionizing radiation on living organisms and the biophysical basis of nervous excitation and muscle contraction. He was one of the first in the U.S.S.R. to use radioactive isotopes in biological investigations.

Bibliography:

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FRANK, IL'YA MIKHAILOVICH (Physicist)

I. M. Frank was born October 23, 1908. After graduating in 1930 from Moscow University, he worked in the State Optical Institute. In 1934 he went to work at the Physics Institute of the U.S.S.R. Academy of Sciences. He became a professor in 1944 at Moscow University. Since 1946 he has been a Corresponding Member of the U.S.S.R. Academy of Sciences. He was awarded a Stalin Prize in 1946, and in 1958 the Nobel Prize.

Frank's major work is in physical optics and nuclear physics. Together with the Soviet scientist, I. E. Tamm, he gave the theory of the Cherenkov effect. In cooperation with L. V. Groshev, he studied pair formation. Frank, and his associates, studied the physics of neutrons.

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R. K. Freidlina was born September 20, 1906. She graduated from Moscow University in 1930 and worked from then until 1934 at the Scientific Research Institute of Insectofungicides. In 1935-39 and in 1941-54, she was at the Institute of Organic Chemistry of the U.S.S.R. Academy of Sciences. Freidlina also taught at the Moscow Institute of Fine Chemical Technology in 1938-41. In 1945 she became Chief of the Laboratory of the Institute of Organo-Elemental Compounds of the U.S.S.R. Academy of Sciences. Since 1958 she has been a Corresponding Member of the U.S.S.R. Academy of Sciences. In 1954 she became a member of the Communist Party of the Soviet Union.

Freidlina has synthesized and investigated the structure and properties of organic compounds of mercury, arsenic, tin, antimony, lead, titanium, silicon, zirconium, boron, fluorine and chlorine. Of theoretical interest are her discoveries of homolytic isomerization of organic compounds in solutions, investigation of adduct of metallic salts to olefin and acetylenes, which led to the establishment of the concept of quasi-complex compounds. Freidlina's investigations of reactions of telomerization of olefins and chemical transformations of telomers made possible the development of an industrial method of synthesizing intermediate products for production of Soviet synthetic fibers—*enanth* and *pelargon*.

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Frish studied atomic spectra of the Zeeman effect, the hyper-fine structure of spectra lines, nuclear moments, spectroscopy of gaseous discharge, and gas spectral analysis. From 1953 he has been studying elementary processes in atomic excitation by electronic impact.

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FRUMKIN, ALEKSANDR NAUMOVICH (Physical Chemist)

A. N. Frumkin was born October 24, 1895. In 1915 he graduated from Odessa University. He was professor at the Institute of Odessa University from 1920 to 1922, and from 1922 to 1946, he was on the staff of the L. Karpov Physico-Chemical Institute in Moscow. Frumkin spent 1928-29 at the University of Wisconsin, U.S.A., as a lecturer in colloidal chemistry. In 1930, he was elected to the chair of electrochemistry at the Moscow University. He was appointed, in 1939, to the staff of the

Institute of Physical Chemistry of the U.S.S.R. Academy of Sciences, and from 1939 to 1949 was the Director. Since 1932 he has been an Academician of the U.S.S.R. Academy of Sciences. He received a Lenin Prize in 1931, and in 1941 a Stalin Prize.

Frumkin's research is primarily in surface phenomena and in the theory of electrochemical processes. He applied the Gibbs equation to adsorption and derived the equation for adsorbed molecules on a surface. He developed the concept of the structure of the electrical double layer at the solid-liquid interface. In his experiments, he established the quantitative theory of the influence of the electric field on molecular adsorption. By means of measurements of potential jumps on the liquid-gas interface, he studied the nature of chemical bonds in molecules. In 1929, Frumkin developed the theory of kinetics in electrochemical reactions based on the composition of the solution and the structure of the double layer. He also recognized the importance of the zero potentials at the metallic electrodes. With V. G. Levich, Frumkin developed a theory of diffusion processes which take place in solutions while under the influence of an electrical field. He explained the mechanism of a number of electrochemical reactions, such as the reduction of oxygen and other anions. He has many pupils among the Soviet electrochemists. His scientific work found application in the generation of electrical energy by chemical sources, the wetting of metals by electrolytes, flotation, polarography, heterogeneous catalysis, and colloidal chemistry.

In 1958 Frumkin was appointed Director of the Institute of Electro-Chemistry of the U.S.S.R. Academy of Sciences.

Frumkin visited the United States in May 1960 to attend the Electrochemical Society meetings in Chicago.

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The main work of Galin is in the theory of elasticity. He has investigated the elastic-plastic problems in unsettled filtration of liquids.

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In his thesis for the candidate's degree, Gel'fand developed the theory of integration of functions. His thesis for the Doctor's degree was devoted to the theory of normalized rings. This theory served as a basis for functional analysis in the most varied areas of mathematics: theory of trigonometric series, group theory, theory of differential equations. Since

1943, he has been working on the theory of unitary infinitely measurable representations of continuous groups. At the same time, he has been occupied with the theory of generalized functions and their application in differential equations, and also in quantum mechanics.

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Gelfond has worked in number theory and the theory of functions of a complex variable. He established new methods of analyzing transcendence of numbers. In his works (1929 and 1934) Gelfond solved the problem of Euler-Hilbert, proving the transcendence of logarithms of algebraic numbers with algebraic bases.

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I. P. Gerasimov was born December 9, 1905. After graduation from the Leningrad University in 1929, he worked in various departments of the U.S.S.R. Academy of Sciences; first at the Soil Institute and later at the Institute of Geography. Gerasimov has been a member of the Communist Party since 1944. In 1946 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences and in 1953 an Academician. He was made an Honored Scientist of Kazakh S.S.R. in 1944.

Gerasimov's field of investigation is paleogeography, geomorphology, geology of Quaternary deposits and geography of soils of Central Asia, Kazakhstan, Russian Plain, Western Siberia, Southern and Central Ural, and also some foreign territories. Gerasimov is working on the development of natural physico-geographical zones, the history of the development

of topography of the U.S.S.R., the principles of geomorphological zoning, general question of geography, cartography and the classification of soils.

As of 1961, Gerasimov was Chairman of the Permanent Commission for the Complex Utilization of Experimental Stations and Bases Operated under Academic Management. He also has been Chairman of the State Committee of Soviet Geographers, U.S.S.R. Academy of Sciences, and a member of Moscow State University.

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Gerasimov's main works deal with the study of thermodynamic properties of non-ferrous metals.

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Ginzburg's investigations are in the theory of radio propagation in the ionosphere, radio astronomy, the origin of cosmic rays, ferroelectric phenomena, the theory of super conductivity, the theory of elementary particles, and some questions of optics.

In 1962, Ginzburg was awarded the M. V. Lomonosov Prize for work in the illumination theory and surface light movement.

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V. A. Golubtsov was born April 10, 1894. After he graduated in 1925 from the Leningrad Electro-Technical Institute, he worked in the building and operation of a series of electric power stations. In 1934-1936 he was Chief Engineer at Kashmira and subsequently at Chelyabinsk state electric power plant. He was also chief engineer in the building of the Dneprodzerzhinsk state electric power plant in 1936-1937. In 1944 he began teaching at the Moscow Power Institute and in 1945 was made a professor. He became Chief of the laboratory on complex methods of utilizing fuel in power stations of the Energy Institute of the U.S.S.R. Academy of Sciences in 1955. Since 1931 Golubtsov has been a member of the Communist Party of the Soviet Union. In 1953 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences. He has been awarded two orders as well as medals, and in 1950 he received a Stalin Prize.

The scientific works of Golubtsov are devoted to questions on water preparation, air preheating, deaeration, dust preparation, utilization of ash, particularly the use of ash of the coal fields of Moscow in order to obtain alumina. He participated in developing new methods for softening water for industrial boilers.

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and P. P. Elizarov. Operation of Boiler Plants of Power Stations. Moscow-Leningrad: 1950.

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Some questions on rational utilization of fuel. Works of the Moscow Energy Institute, 1955, #25.

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GORBACHEV, TIMOFEI FEDOROVICH (Mining Engineer)

T. F. Gorbachev was born June 23, 1900. In 1928, he graduated from the Tomsk Polytechnical Institute, and subsequently worked in the coal industry. From 1946 to 1950, he was chief engineer of a group of enterprises known as Kuzbas Coal. From 1950 to 1954, he was Director of the Kemerovo Mining Institute. In 1954, he was Chairman of the Presidium of the U.S.S.R. Academy of Sciences West Siberian branch (dissolved January 1959). In 1949 he was awarded a Stalin Prize. He has also received the Order of Lenin, two other orders, and medals. He was made a Hero of Socialist Labor in 1948. Since 1942 he has been a member of the Communist Party of the Soviet Union. He was elected, in 1958, a Corresponding Member of the U.S.S.R. Academy of Sciences.

Gorbachev has worked in the exploitation of systems of thick, steeply dipping beds and movable shoring. He developed a self-propelled machine "Kuzbas" which utilizes water.

As of 1961, Gorbachev was a Vice-President of the Siberian Branch U.S.S.R. Academy of Sciences.

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Ways of Improving Systems of Exploitation of Thick, Steeply Dipping Beds of South Kuzbas. Moscow: 1949.

Preliminary Results of Observing the Undermining of Coal Beds, Mine Working, Constructions and Sources of Water in the Kuzbas. Moscow: 1951.

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Combined system of exploitation with whields. . . Improvement of the Shield Method of Exploitation. Moscow: 1954.

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GORINOV, ALEKSANDR VASIL'EVICH (Railway Engineer)

A. V. Gorinov was born August 4, 1902. After graduating from the Moscow Institute of Communication Engineers, he worked in a series of expeditions for surveying new railroads (Chardzhou-Kungrad, Ulan-Ude-Naushki, Ural'sk-Iletsk). He was chief-construction engineer for the Moscow-Donbass Railroad. He taught at Leningrad Institute of Railroad Engineers in 1931-1946, and in 1937 became professor. He taught also at the Military-Transport Academy of the Soviet Army from 1932 to 1938. In 1941 he became professor at Moscow Institute of Railroad Engineers. He also worked in a number of scientific research organizations. Gorinov has been a member of the Communist Party of the Soviet Union since 1920. In 1939 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences.

The main work of Gorinov is in the complex design of railroads, the theory of inertia calculations and the reserve utilization of a train's kinetic energy, the improvement of transportation with gradually increasing railroad power, and the scientific basis for classifying railroads.

Bibliography:

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Classification of the railroads of the U.S.S.R. Izvest. Akad. Nauk S.S.S.R., Otdel Tekh. Nauk, 1946, #5.

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Designing of Railways, 3rd ed., 1-3. Moscow: 1948.

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GORSKI, IVAN IVANOVICH (Paleontologist)

I. I. Gorski was born September 12, 1893. In 1935, he became a professor at the Leningrad Mining Institute. From 1943 to 1947, he was Director of the All-Union Scientific Research Institute of Geology. He was Chairman of the Karelo-Finnish Branch of the U.S.S.R. Academy of Sciences from 1947 to 1952. In 1950, he became Director of the Laboratory on Coal Geology of the U.S.S.R. Academy of Sciences, and in 1954 he was elected Chairman of the All-Union Paleontological Society. Since 1943, he has been a Corresponding Member of the U.S.S.R. Academy of Sciences.

Gorski is a specialist in the geology of the Urals, particularly of the Ural coal deposits. He investigated coral fauna of upper Paleozoic U.S.S.R. He has studied the geology of coal bearing regions of the Urals, Kazakhstan and Central Asia; stratigraphy and tectonics of the Urals, Kazakhstan and other parts of U.S.S.R.; coral and other fauna of the Carboniferous Urals, Kazakhstan, Central Asia and the Arctic. He took part, as a Chief Editor, in compiling geological maps of the Urals (scale of 1/500,000-1939), of the European section of the U.S.S.R., of the Urals and Caucasus (scale of 1/1,500,000-1948), a map for the survey of coal regions in the U.S.S.R. (scale of 1/5,000,000-1956), etc. Total amount of works is over 200 titles.

Bibliography:

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GRASHCHENKOV, NIKOLAI IVANOVICH (Neurologist)

N. I. Grashchenkov was born March 26, 1901. He graduated in 1926 from the University of Moscow and until 1933 was a member of the Medical Faculty of the University (which later was reorganized into the first Medical Institute of Moscow). He also worked at the Institute of Experimental Medicine, and in 1939-1944 was Director of this Institute. In 1937-1939 Grashchenkov was First Deputy Public Commissar for Health and Welfare. During World War II, 1941-45, he was consultant on problems of neuro-pathology and neuro-surgery in the army. He conducted epidemiological work in the prophylaxis and treatment of tick-borne diseases and Japanese encephalitis. From 1944 to 1948, he was Director of the Neurological Institute of the Academy of Medical Sciences of the USSR. In 1951 he became professor at the Central Institute of the Advancement of Physicians in Moscow. Grashchenkov has been a member of the Communist Party of the Soviet Union since 1918. In 1939 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences, in 1944 an Active Member of the U.S.S.R. Academy of Medical Sciences, and in 1947 a member of the Belorussian Academy of Sciences. From 1948 to 1951 he was President of the Academy of Sciences of the Belorussian S.S.R. From 1959 to 1961 he was Assistant Director General of W.H.O. in Geneva.

Grashchenkov's basic work deals with the physiology and pathology of the sense organs, electro-physiology of the central nervous system, traumatic shock and infectious diseases of the nervous system.

In September 1962, Grashchenkov visited the United States to attend the 5th World Congress of Sociology in Washington.

Grashchenkov's other activities in his field include being Director of the Laboratory of Clinical Neurophysiology, Moscow, Academy of Sciences U.S.S.R.; member, the Moscow City Clinical Hospital, Moscow City Health Department, Ministry of Health R.S.F.S.R.; member of the First Moscow Medical Institute im. I. M. Sechenov, Moscow Ministry of Health R.S.F.S.R., member of Ministry of Health.

Bibliography:

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Biography:

Nikolai Ivanovich Grashchenkov. On his 60th birthday. I. M. Sechenov Physiological Journal of the USSR, 4, 1961.
(English version).

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GRIGOLYUK, EDUARD IVANOVICH (Mechanical Engineer)

E. I. Grigolyuk was born December 13, 1923. After graduating from Moscow Aviation Institute in 1934, he taught there. In 1946-1950 he taught at the Moscow Technological College. He began work at the Experimental Construction Bureau in 1948, and in 1953 at the Institute of Mechanics of the U.S.S.R. Academy of Sciences. In 1952 he was made editor of an abstract journal "Mechanics." He was elected, in 1958, a Corresponding Member of the U.S.S.R. Academy of Sciences.

Grigolyuk's main works are concerned with the theory of shells. He is also concerned with the theory of elasticity and the theory of plasticity.

Bibliography:

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GRIGOREV, ANDREI ALEKSANDROVICH (Geographer)

A. A. Grigorev was born November 1, 1883. In 1907 he graduated from Petrograd University. He organized in 1918 the Geographic Institute in Petrograd where he was a professor and dean until 1925. From 1925 to 1936 he was a professor at Leningrad University. In 1918 Grigorev organized in the Academy of Sciences an industrial geography department of the commission which studied the natural productive forces of Russia. This department became in 1931 the Geographic Institute of the U.S.S.R. Academy of Sciences, and until 1951, Grigorev was the Director. He has been an Academician of the U.S.S.R. Academy of Sciences since 1939. In 1946 he became a member of the Communist Party of Soviet Russia. He was awarded a Stalin Prize in 1947. He is a member of a number of scientific societies including the Geographic Society of the U.S.S.R. Grigorev is on the main editorial board of the Bol'shaya Sovetskaya Entsycl. (Great Soviet Encyclopedia). He has been active in the Society for the Dissemination of Political and Scientific Knowledge. Also he is interested in the history of Russian geography.

In 1904, and again in 1921, Grigorev completed an expedition to the Bolshezemelskaya tundra. At various times, he investigated little-known regions of the South Urals (1923), Yakutsk, ASSR (1925-26), the Kolskii Peninsula (1928-29 and 1931), and Kazakhstan, carefully studying the elements of the geographical environment. His results have been useful to soil scientists,

paleographers, geomorphologists, and geobotanists. Grigorev has published more than 300 articles. His monograph, *The Subartic*, sums up the material on the tundra belt, and was the first geography treatise to be awarded a Stalin Prize. In his articles from 1928-1930, he introduced a new direction in geography, subsequently named "dynamic geography," in which great stress is paid to natural processes. He has attempted to convert geography from a descriptive science to one which establishes general laws of physico-geographical processes, based on studies of the paleography of the Quaternary Period, on discoveries of fresh-water diatomites, and on the evolution of physico-geographic processes on the earth's surface since the Devonian Period.

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Biography:

G. D. Rikhter. On the 60th Anniversary of Academician

A. A. Grigorev. *Priroda*, 1944, #2.

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GRINBERG, ALEKSANDR ABRAMOVICH (Chemist)

A. A. Grinberg was born April 20, 1898. In 1924 he graduated from Leningrad University. He became, in 1936, professor at Lensovet Leningrad Technological Institute. From 1943 until 1958 he was a Corresponding Member of the U.S.S.R. Academy of Sciences, and in 1958 he was elected Academician. In 1946 he was awarded a Stalin Prize.

Grinberg investigated the structure of platinum salts and isomerism of platinum and palladium divalent derivatives. Also he has studied acid-base and redox properties of complex

compounds, equilibria of their aqueous solutions, and use of tracers in chemistry of complex compounds.

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GRINBERG, GEORGII ABRAMOVICH (Physicist)

G. A. Grinberg was born June 16, 1900. He is the brother of Academician A. A. Grinberg (chemist). He graduated in 1923 from Petrograd Polytechnic Institute and in 1935 received a Doctor of Physical-Mathematical Sciences degree. From 1919 to 1930 Grinberg worked in the State Roentgenological and Radiological Institute and in the Physico-Technical Institute in Leningrad. In 1924-1955 he taught at Leningrad Polytechnic Institute where in 1930 he became professor. He also worked during 1929-1941 at the plant "Svetlana" in Leningrad. In 1941 he began working at the Physico-Technical Institute of the U.S.S.R. Academy of Sciences. Grinberg has been a Corresponding Member of the U.S.S.R. Academy of Sciences since 1946. In 1949 he was awarded a Stalin Prize.

Grinberg's major work is in theoretical electronics, the theory of electromagnetic wave propagation, and in the theory of elasticity. He formulated a general theory for the focusing effect of electric and magnetic fields. He proposed the theory of coastal refraction. He studied the problem of radio propagation in heterogeneous spheres. Grinberg originated a unique method of integrating equations of mathematical physics. He is the author of the work, "Selected Questions on the Mathematical Theory of Electrical and Magnetic Phenomena" (1948) (Stalin Prize, 1949).

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E. F. Gross was born October 20, 1897. He graduated from Leningrad University in 1924, and in 1938 became a professor at this University. Beginning in 1944, he has been working also at the Physico-Technical Institute of the U.S.S.R. Academy of Sciences. In 1946 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences and that same year a recipient of a Stalin Prize.

In 1940 Gross proposed a spectroscopic method for determining orientational relaxation times of molecules from anisotropic scattering. In 1951, he discovered an optic spectrum of excitons which transmit energy of excited states in crystals. In 1954-55, he discovered in excitons the Zeeman and Stark effect and the disassociation of excitons under the influence of an external electrical field. In 1956, he discovered the radiation spectrum of excitons, their large diamagnetism, and their role in inner photo-effect.

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and D. S. Nadzvetskii. Resonance and non-resonance irradiation of centers in crystalline GaP and their interaction with lattice phonons. Doklady Akad. Nauk S.S.S.R. 146, #3, 1047-50 (1962).

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GRUSHIN, PETR DMITRIEVICH (Mechanics Specialist)

In June 1962, P. D. Grushin was elected Corresponding Member of the U.S.S.R. Academy of Sciences.

GUTYRYA, VIKTOR STEPANOVICH (Chemist)

V. S. Gutyrya was born September 11, 1910. After graduating from the Azerbaijan Industrial Institute in 1932, he worked at the Azerbaijan Oil Research Institute (now the Azerbaijan Scientific Research Institute of Oil-Refining Industry). In 1937-54 and again in 1955 he was made Director of the Institute. He has been an Academician of the Azerbaijan S.S.R. Academy of Sciences since 1949, and since 1953 a Corresponding Member of the U.S.S.R. Academy of Sciences. In 1942 he received a Stalin Prize.

Gutyrya has studied chemistry of oil and technology of petrochemical synthesis.

Bibliography:

and others. Oil of Azerbaijan. Baku: 1945.

Catalytic Refining of Distillates of Thermal Reforming. Baku: 1946.

Ya. Masumyan, S. M. Lisovskaya. Distillation Curves of Baku Oil. Baku: 1947.

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IERUSALIMSKII, NIKOLAI DMITRIEVICH (Microbiologist)

N. D. Ierusalimskii was born in 1901. He graduated from Moscow State University in 1931. From 1930-35, he was a microbiologist at the Chemico-Pharmaceutical Institute in Moscow. In 1935 he began to work at the U.S.S.R. Academy of Sciences Institute of Microbiology, where he became in 1950 deputy director. From 1935-38 he was also deputy section chief of the Scientific-Research Laboratory on Industrial Fermentation, and in 1954, became a professor at Moscow State University. Since 1946 he has been a member of the Communist Party of the Soviet Union. He was elected, in 1960, to the U.S.S.R. Academy of Sciences as a Corresponding Member.

Ierusalimskii's work is primarily concerned with the study of microorganism development in connection with nutritive conditions.

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IL'YUSHIN, ALEKSEI ANTONOVICH (Mechanical Engineer)

A. A. Il'yushin was born January 20, 1911. In 1934 he graduated from Moscow University and became a professor there in 1938. In 1943, he became Chief of the Department of Strength of Materials of the U.S.S.R. Academy of Sciences Institute of Mechanics of which he became Director in 1953. He has been a member of the Communist Party of the Soviet Union since 1940. He was elected, in 1943, a Corresponding Member of the U.S.S.R. Academy of Sciences. In 1948 he was awarded a Stalin Prize.

Il'yushin has worked in the theory of elasticity and plasticity. In 1936-38 he obtained important results in the area of viscous-plastic flow and its stability for metals. In 1937 he designed a pile-driver for testing materials and construction models at high speeds of deformation. In 1942-48 he formulated a theory on small, elastic-plastic deformations which appear as the basis for calculating structures which work beyond the limits of elasticity. He also proposed a method for solving these problems. He developed a theory on the stability of plates, and shells beyond the limits of elasticity. In 1951-52 he formulated a theory of modeling in the processes of preparing metals by pressure. In 1953-54 he established a postulate on isotropy in general theory on plasticity. Il'yushin also solved a number of problems in gaseous dynamics.

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Questions on the theory of flows of plastic substances on surfaces. Applied Mathematics and Mechanics, 1954, 18, #3.
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Biography:

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IMSHENETSKII, ALEXANDRE ALEKSANDROVICH (Micro-biologist)

A. A. Imshenetskii was born January 8, 1905. He graduated from the University of Voronezh in 1926. In 1930 he worked at the U.S.S.R. Academy of Sciences Institute of Microbiology, where he became Director in 1949. He was elected to the U.S.S.R. Academy of Sciences in 1946 as a Corresponding Member, and in June 1962, an Academician.

Imshenetskii's researches are in the structure, biology, individual growth, variation and physiology of micro-organisms. In studying the construction of bacteria, he proved that the majority of them retain a significant amount of vital substance but lack an individual morphological nucleus and that the latter is found only in complex bacteria. He explored changes in the structure of bacteria in the process of ontogeneses under the influence of various external factors which enabled him to discover the metaphysical essence, the so-called theory of cyclogenics. His other work is the study of the biology of bacteria which attack cellulose. His work includes a study on the influence of increased temperatures on the course of microbiological processes (a comparable study of the nature of mesophilic and thermophilic bacteria was made). He has explored groups of cellulose, amylolytic, proteolytic and thermophilic bacteria, which are of practical value. He showed ways of replacing the mesophilic bacteria with the thermophylic which hastens the course of microbiological processes (for example—fermentation). A series of his research deals with the biology and physiology of nitrifying bacteria; the variability and selectivity of yeast, mold fungus and bacteria.

In April 1960, Imshenetskii visited the United States on an exchange program at the Rockefeller Institute for Medical Research in New York City.

Imshenetskii was in the United States again in April 1961 to attend the Third International Space Science Symposium (COSPAR), Washington; the Brain Research Institute of University of California, Los Angeles Medical Center; a conference of the New York State Medical Society, New York City; and the Space Medicine Program of the New York Medical College.

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Cellulose Microbiology. Moscow: 1953.

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ISAKOV, IVAN STEPANOVICH (Naval Officer)

I. S. Isakov was born August 22, 1894. In 1929 he graduated from the Naval Academy. From 1933 to 1938, he was Chief of Staff and subsequently Commander of the Baltic Fleet, and at the same time head of the Naval Academy. During World War II, he was Chief of Staff of the Naval Forces. In 1947, he was deputy to the Commander-in-Chief of the Naval Forces. He has been a member of the Communist Party of the Soviet Union since 1939, and was a delegate to the first convocation of the Supreme Soviet. In 1958, he was elected to the U.S.S.R. Academy of Sciences as a Corresponding Member.

In 1947-55, Isakov was the main editor of the Naval Atlas, for the publication of which he received the Stalin Prize (1951). In 1950-54, he was a member of the editorial board of the Atlas of the World. Isakov is a consultant for a number of scientific institutions. He is the author of works on military geography.

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ISHLINSKII, ALEKSANDR YUL'EVICH (Mechanics Scientist)

A. Yu. Ishlinskii was born August 6, 1913. After graduating from Moscow University in 1935, he taught there and in 1945

became a professor. From 1948 to 1955 he was Director of the Institute of Mathematics of the Ukrainian S.S.R. Academy of Sciences and also a professor at Kiev University. In 1955 he was appointed director of a scientific research institute. He has been a member of the Communist Party of the Soviet Union since 1940. He was elected Academician of the Ukrainian S.S.R. Academy of Sciences in 1948, and in 1960 Academician of the U.S.S.R. Academy of Sciences.

Ishlinskii's main investigations are in general mechanics, elasticity, and oscillations. He presented a theory of gyroscopic devices, investigated the behavior of complex gyroscopic systems on a movable base, and gave the theoretical basis for a space gyroscope.

Bibliography:

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On the dynamics of soil masses. Doklady Akad. Nauk S.S.S.R., 1954, 95, #4.

General theory of plasticity with a linear strengthening. Ukr. Mat. Zhur., 1954, #3.

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The theory of a gyroscopic pendulum. Priklad. Mat. i Mekh., 1957, #1.

Theory of a bigyroscopic gyrovertical. Priklad. Mat. i Mekh., 1957, #2.

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IVANOV, LEONID ALEKSANDROVICH (Deceased, April 12, 1962).

L. A. Ivanov was born February 24, 1871. He graduated from Moscow University in 1895. From 1904 to 1941, he was professor at the Institute of Forestry (now the S. M. Korov Forest-Technical Academy). From 1938 to 1947, he headed the photosynthesis laboratory of the Institute of Plant Physiology of the U.S.S.R. Academy of Sciences. Since 1944, he has been the chief of the Laboratory on the Physiology and Ecology of Wood Strains of the U.S.S.R. Academy of Sciences Institute of Forests. He became a Corresponding Member of the U.S.S.R. Academy of Sciences in 1922.

Ivanov studied the influence of light and moisture on wood and established the relationships in the distribution and absorption of physiologic radiation in forests under variable conditions. He established an original method of investigating photosynthesis, designed new devices--phytoactinometer for studying photosynthesis, phytoatmometer for studying evaporation, and others. Ivanov developed the theoretical basis of tapping conifers, which he presented in the work *Biological Basis of Utilizing Conifers of U.S.S.R. in the Turpentine Industry* (1934). He has also carried out researches on the anatomy of wood strains, the systematics of simple plants, investigation of the processes of fermentation and respiration, and the transformation of phosphorus in plants.

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Biography:

N. A. Maximov. Physiology of Plants. Outline on the History of Russian Botany. Moscow: 1947.

N. L. Kossovich. Half a Century of Uninterrupted Creative Activity of Professor L. A. Ivanov in the Forest-Technical Academy of S. M. Kirov. Works of the Forest-Technical Academy of S. M. Kirov, 1948, #64.

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KABACHNIK, MARTIN IZRAILOVICH (Organic Chemist)

M. I. Kabachnik was born August 27, 1908. In 1931 he graduated from the Chemical Technological Institute in Moscow and began to work for the U.S.S.R. Academy of Sciences. He was a member of the Institute of Organic Chemistry from 1939 until 1954, when he became a member of the Institute of Elementary Organic Compounds. In 1953 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences and in 1958 an Academician. He won a Stalin Prize in 1946.

The principal research of Kabachnik deals with the study of tautomerism of organic compounds and with synthesis of organic phosphorous insecticides.

Bibliography:

and T. A. Mastryukova. Theory of tautomeric equilibrium, Communication #3. Problem of pseudomerism. *Izvest. Akad. Nauk S.S.S.R., Otdel. Khim. Nauk*, 1953, #1.

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KADOMTSEV, BORIS BORISOVICH (Physicist)

B. B. Kadomtsev was elected a Corresponding Member of the U.S.S.R. Academy of Sciences in June 1962.

Bibliography:

Convective instability of a plasma column (stream). *Zhur. Ekspt'l. i Teoret. Fiz.* 37, #4, 1096-1101 (1959). NSA 14:5958, 1960.

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and A. V. Timofeev. Drift of unstable heterogenous plasma in a magnetic field. *Doklady Akad. Nauk S.S.S.R.* 146, #2, 581-84 (1962).

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KALESNIK, STANISLAV VIKENT'EVICH (Geographer)

S. V. Kalesnik was born January 23, 1901. He graduated from Leningrad University in 1929, where he became a professor in 1938. In 1940-1959 he was scientific secretary, and in 1952 he became vice president of the All-Union Geographical Society. In 1953, he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences.

Kalesnik's main research is concerned with glaciology, geomorphology and geology of Central Tien Shan, Dzhungarskii Alatau, and also with general glaciology and physical geography. He studied signs of regressive phases in the evolution of glaciers, and introduced new ideas and terminology (chionosphere, energy of glaciation) into glaciology.

Kalesnik has been Director of the Laboratory on Limnology since 1955.

Bibliography:

Mountainous and Glacial Regions of the U.S.S.R. Leningrad-Moscow: 1937.

General Glaciology. Leningrad: 1939.

Basis of General Geography, 2nd ed. Leningrad: 1955.

Short Course in General Geography. Moscow: 1957.

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KANTOROVICH, LEONID VITALEVICH (Mathematician)

L. V. Kantorovich was born January 19, 1912. He graduated from Leningrad University in 1930, and received the degree of Doctor of Physical-Mathematical Science in 1935. From 1930-1939, he taught at the Leningrad Institute of Industrial Construction Engineers. He began teaching at Leningrad University in 1932, and became a professor there in 1934. He has been working at the Leningrad Branch of the U.S.S.R. Academy of Sciences Institute of Mathematics since 1940. In 1958, he was made a Corresponding Member of the U.S.S.R. Academy of Sciences. He was the recipient of a Stalin Prize in 1949, for work on functional analysis.

The main work of Kantorovich is in theory of functions of a real variable, and to approximate methods of analysis, functional analysis, semi-ordered spaces, the theory of methods of approximation, utilization of computers, particularly automation of programming, and application of mathematics in planned economic analysis.

Bibliography:

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and L. I. Gor'kov. Some functional equations arising in the analysis of a one-product economic model. Doklady Akad. Nauk S.S.S.R. 129, #4, 732-35 (1959).

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KAPELYUSHNIKOV, MATVEI ALKUNOVICH (Petroleum Engineer)

M. A. Kapelyushnikov was born September 13, 1886. He graduated from the Tomsk Technological Institute in 1914, after which he worked at a scientific research institute in Baku until 1937 as the Director of the Office of Turbodrilling and Cracking. He was awarded the title Honored Scientist of the R.S.F.S.R. in 1947, and was elected to the U.S.S.R. Academy of Sciences as a Corresponding Member in 1939.

In 1912 he proposed turbodrilling of oil wells. The first turbodrills had a single-stage turbine and a reducer for diminishing the speed of the working shaft connected to a drill. Later, a group of engineers under the leadership of P. P. Shumilov developed a multi-stage reducerless turbodrill, which was widely utilized. In 1924-31 Kapelyushnikov, together with V. G. Shukhov, designed and built the first Soviet cracking plant. In 1933, together with S. D. Zalkin, Kapelyushnikov developed pneumatic control of a drilling rig. In 1952, he established the fact that dissolving oil in gas under considerable pressure makes it possible to explain the conditions in the migration of oil and formation of deposits.

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KAPITSA, PYOTR LEONIDOVICH (Physicist)

P. L. Kapitsa was born July 8, 1894. In 1918 he graduated from the Polytechnic Institute in Petrograd (Leningrad) and began scientific work under A. F. Ioffe (1880-1959, solid state physicist). He was sent in 1921 on a scientific trip to England where he worked until 1930 under E. Rutherford in the Cavendish Laboratory at Cambridge University. From 1930 to 1934 he was Director of the Monde Laboratory at Cambridge University. In 1935 Kapitsa was persuaded to remain in the Soviet Union. From 1935 to 1946 and again in 1955 he was Director of the Institute of Physics Problems of the U.S.S.R. Academy of Sciences. He was elected a Corresponding Member of the U.S.S.R. Academy of Sciences in 1929 and an Academician in 1939. In 1941 and in 1943 he received Stalin Prizes. He was made a Hero of Socialist Labor in 1945. Kapitsa is editor of the Soviet Journal of Experimental and Theoretical Physics. He was a member of and honored by many foreign organizations including: London Royal Society (1929), Danish Academy of Sciences (1946), National Academy of Sciences of the U. S. A. (1946), English Institute of Metals (1943), Franklin Institute in the U. S. A. (1944), Paris University, University of Oslo, University of Algiers.

The first investigations of Kapitsa are devoted to the study of the inertia of electrons and properties of radiation. In 1920, in the article, "The Possibility of Determining the Magnetic Moment of the Atom," Kapitsa, together with N. N. Semenov, proposed an experiment on the determination of magnetic moments of atoms in atomic beams. Kapitsa constructed an

installation for creating very powerful magnetic fields. He observed the splitting of spectral lines in fields up to 320 kilogauss, discovered linear increase of electrical resistance of metals with the field, and studied magnetostriction of diamagnetic bodies in these fields. Kapitsa developed a large capacity hydrogen liquifier of helium by using the adiabatic principle. He proposed a new method of liquifying air in a low pressure cycle and for using a turbine engine driven by compressed gas. Using a turbine engine driven by compressed gas to liquify air, Kapitsa built an installation (1939) for obtaining large quantities of liquid oxygen by way of fractionation. He is the author of the treatise on "Turbine Engine Driven by Compressed Gas for Obtaining Low Temperatures and Its Application in Liquification of Air" (1939; Stalin Prize 1941). He conducted investigations on the properties of liquid helium II and discovered (1938) the phenomenon of super fluidity. The results of these investigations are in "Heat Transfer and Super Fluidity of Helium II" (1941) and "Investigating the Mechanism of Heat Transfer in Helium II" (1941; Stalin Prize 1943). In connection with the study on the operation of a fractionating column, Kapitsa conducted investigations on the wave heat processes in moving thin layers of liquid. Later development of this work led to the establishment of a quantitative theory on interaction of marine waves with the wind. Kapitsa developed a hydro-dynamic theory of lubricating bearings. In 1951 he published studies on the movement of a pendulum with a vibrating suspension device and proposed a hypothesis on the nature of ball lightning (1955).

In 1960 Kapitsa was awarded the Lomonosov Gold Medal for his work in low temperature physics.

As of 1961, Kapitsa was a Member of the Presidium of the USSR Academy of Sciences.

In June 1958, he visited the United States to attend the Gordon Research Conference on Polymer Research at New London, New Hampshire. He has also attended the Pugwash Conferences.

Biography:

Academician Pyotr Leonidovich Kapitsa. Vestnik Akad. Nauk S.S.S.R., 1939, #2-3, 193.

Academician Pyotr Leonidovich Kapitsa (On the 60th Anniversary since the date of birth). Zhur. Eksptl. i Teoret. Fiz., 1954, 27, #3.

E. V. Shpol'skii. Pyotr Leonidovich Kapitsa (On the 60th Anniversary since the date of birth). Uspekhi Fiz. Nauk, 1954, 54, #4.

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KARANDEEV, KONSTANTIN BORISOVICH (Electrical Engineer)

K. B. Karandeev was born July 18, 1907. He graduated in 1930 from Leningrad Polytechnic Institute. In 1929-1935 he worked in the Electro-Physical Institute in Leningrad. He was professor at the Leningrad Institute of Signal Engineering in 1937-42 and also deputy director of the All-Union Scientific Research Institute of Metrology. In 1944 he became professor at L'vov Polytechnic Institute. Beginning in 1952, he worked in the Institute of Machine Studies and Automation of the Ukrainian S.S.R. Academy of Sciences. Karandeev was made Director of the Institute of Automation and Electrometry of the Siberian branch of the U.S.S.R. Academy of Sciences in 1957. He was elected a Corresponding Member of the Ukrainian S.S.R. Academy of Sciences in 1957 and in 1958 a Corresponding Member of the U.S.S.R. Academy of Sciences. In 1954 he was made an Honored Scientist of the Ukrainian S.S.R.

Karandeev's main works deal with developing exact methods of electrical measurement, methods of measuring low and high currents, low electromotive forces, and the theory of bridge methods. He has been concerned with semiconductor rectifiers, telemetry, use of computers in measuring schemes and devices, and with geophysical apparatus.

Bibliography:

Methods of Electrical Measurement (Differential, Bridge, and Compensation). Moscow-Leningrad: 1952.

Bridge Methods of Measurement. Kiev: 1953.

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Direct Current Galvanometers (Theory and Practice).

L'vov: 1957.

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KARAVAEV, NIKOLAI MIKHAILOVICH (Fuel Chemist)

N. M. Karavaev was born June 7, 1890. After graduating from the Moscow Technological College in 1920, he taught there until 1930. From 1925 to 1932 he was at the Moscow Chemico-Technological Institute, and from 1924 to 1932 he also worked

at the All-Union Heat Engineering Institute. In 1939-41 Karavaev was at the Institute of Fuel Minerals of the U.S.S.R. Academy of Sciences. He became a professor in 1949 at the Moscow Institute of Chemical Machine Building where he had worked since 1946. In 1946 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences.

Karavaev has studied the origin, chemistry, and technology of solid fuels and products obtained from them. Since 1926 he has been investigating the coal of the Kuznets, Irkutsk, and other basins. In 1929 he proposed industrial marking of coal of the Kuznets basin. In 1933-36, Karavaev directed the work on hydrogenation of solid fuels and tars and also on hydrocarbon synthesis from water gas. He has been engaged in the study of semicoking of Siberian coal in industrial conditions. Together with associates, Karavaev proposed a new scheme of processing raw benzene from chemical-coke plants. He worked out a new scheme of periodic rectification. He also worked in the pyrolysis of fuels.

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Lignites. Chemistry and Technology of Fuels and Oils, 1957, #1.

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KARGIN, VALENTIN ALEKSEEVICH (Chemist)

V. A. Kargin was born January 23, 1907. After graduating from Moscow University in 1930, he worked at the L. Karpov Physico-Chemical Institute in Moscow. He became a Corresponding Member of the U.S.S.R. Academy of Sciences in 1946 and in 1953, Academician.

Kargin's fields of scientific work are colloidal chemistry and chemistry of high-molecular compounds. He has developed methods of purification of substances, investigated the formation and properties of alumino-silicates, and worked on the coagulation and stabilization of hydrophobic colloids. He studied the formation of colloidal particles in solutions. He applied these results to the study of the ion exchange in soils, working out a method of strengthening water soaked sand. In his thermodynamic studies Kargin and his associates showed that polymer solutions are true solutions, and determined the sorptive properties of polymers. He has investigated the nature of the phase condition of polymers and their mechanical and rheological properties. The results of these investigations are widely applied in the synthetic fiber, plastics, rubber and paper industries.

In June 1958, Kargin visited the United States to attend the Gordon Research Conference on Polymer Research at New London, New Hampshire. He has also attended the Pugwash Conferences.

Bibliography:

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Adsorption of electrolytes on silica gel, sesquioxides, and their mixed gels. Uspekhi Khim., 1939, 8, #7.

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Biography:

Kargin, Valentin Alekseevich. Vestnik Akad. Nauk S.S.S.R., 1954, #3.

V. L. Karpov. On the 20th anniversary of the scientific activity of the Corresponding Member of the U.S.S.R. Academy of Sciences, V. A. Kargin. Kolloid. Zhur., 1949, 11, #4.

Z. Ya. Berestneva, G. D. Slonimskii. On the 50th anniversary since the date of birth of Valentin Alekseevich Kargin. Kolloid. Zhur., 1957, 19, #2.

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KAZANSKII, BORIS ALEKSANDROVICH (Organic Chemist)

B. A. Kazanskii was born April 13, 1891. In 1918 he graduated from Moscow University where he was a pupil of N. D. Zelinskii, the leader of Russian organic chemistry in the first part of this century. He was made professor in 1935 at Moscow University. And in 1936 he was in charge of and organized the catalytic synthesis laboratory at the Institute of Organic Chemistry at the U.S.S.R. Academy of Sciences. In 1954 he became Director of the Zelinskii Institute of Organic Chemistry. Since 1946 he has been an Academician. He was awarded, in 1949, a Stalin Prize.

Kazanskii has specialized in the conversion of hydrocarbons. In particular, he has investigated hydrogen cleavage of five-membered hydrocarbons in the presence of platinum catalyst. This reaction points the way for conversion of these hydrocarbons into branched paraffins. In 1936 Kazanskii studied the aromatization of paraffins in the presence of platinized carbon at 300° to 310°. Later he determined that an intermediate of this reaction is cyclohexane. In 1954 he showed that in the presence of platinum, paraffins can also convert to hydrocarbons of the cyclopentane series. This cyclization goes to the greatest extent for branched paraffins (isooctane). He also studied aromatization in the presence of different oxides as catalysts. He investigated selective hydrogenation of compounds with several double bonds in the presence of platinum, palladium, and nickel. Recently he has investigated the conjugation of

trimembered cyclic hydrocarbons with a double bond in the side chain (vinylcyclopropane) or in the aromatic nucleus (phenylcyclopropane). With G. S. Landsberg, he developed a method for detailed study of petroleum, using Raman spectra.

In 1961 Kazanskii was awarded the Order of Lenin and two orders of the Red Banner of Labor. He was also a member of the steering Committee of International Union on Pure and Applied Chemistry.

Bibliography:

with A. F. Plate. Aromatization of some cyclopentane and paraffin homologues in the presence of platinized carbon. Zhur. Obshchei Khim., 1937, 7, #2.

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with others. Catalytic conversion of hydrocarbons. Khim. Nauka i Promyshlennost', 1957, 2, #2.

Biography:

A. M. Rubinshtein. Academician Boris Aleksandrovich Kazanskii (for 60th birthday). Vestnik Akad. Nauk S.S.S.R., 1951, #5.

A. F. Plate. Academician Boris Aleksandrovich Kazanskii. Izvest. Akad. Nauk S.S.S.R., Otdel. Khim. Nauk, 1951, #3.

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KAZARNOVSKII, ISAAK ABRAMOVICH (Chemist)

I. A. Kazarnovskii was born September 29, 1890. He graduated in 1914 from Zurich University. In 1922 he began working at the Karpov Physico-Chemical Institute in Moscow. He has been a Corresponding Member of the U.S.S.R. Academy of Sciences since 1939. In 1941 he was awarded a Stalin Prize.

Kazarnovskii's main work deals with problems in the formation of metal chlorides and peroxides. He discovered new, higher oxides such as the peroxide of sodium NaO_2 , 1936, and the ozonides of alkali metals such as ozonide of potassium KO_3 and elucidated their structure; he worked out methods of producing sodium peroxide, anhydrous aluminum chloride from

clays, and a new method of regenerating air (which was used on an industrial scale).

Bibliography:

Structure of inorganic peroxides. Zhur. Fiz. Khim., 1940, 14, #3.

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and others. Isotope exchange of oxygen between a free hydroxyl radical and water. Zhur. Fiz. Khim. 1956, 30, #6.

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KELDYSH, MSTISLAV VSEVOLDOVICH (Mathematician and Specialist in Mechanics)

M. V. Keldysh was born February 10, 1911 in Riga (now in Latvian S.S.R.). He is the son of Vsevolod Mikhaylovich Keldysh (1878, a specialist on ferro-concrete construction and a professor). In 1931 he graduated from Moscow University. Joining the N. Ye. Zhukovskii Central Aero-Hydrodynamics Institute (TsAGI), Keldysh worked during 1934-35 in its Department of Flutter Engineering and in 1943 and in 1945 was a department chief in the Institute. In 1939 he became associated with the V. A. Steklov Mathematics Institute of the U.S.S.R. Academy of Sciences and in 1954 was made Director of that institute's Department of Applied Mathematics.

He has been a member of the Communist Party of the Soviet Union since 1949. In 1943 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences and in 1946 an Academician. He was named academician-secretary of the Academy's Department of Physico-Mathematical Sciences in 1953, has served on the Academy's Presidium since 1953, and in 1960 was elected one of the vice presidents. In 1961 Keldysh replaced A. N. Nesmeyanov as President of the U.S.S.R. Academy of Sciences.

In 1957 Keldysh was named to membership on the Presidium of the newly formed U.S.S.R. National Committee on Theoretical and Applied Mechanics, U.S.S.R. Academy of Sciences. The following year he was cited as a member of the organization committee of the All-Union Conference on Theoretical and Applied Mechanics, and when that conference convened in Moscow

during January 27-February 3, 1960, he served as chairman of the Section on General and Applied Mechanics. Since 1956 he has been a member of the editorial boards of the journals *Matematicheskii Sbornik*, *Novaya Seriya*, and *Prikladnaya Matematika i Mekhanika*.

Among the honors and awards that have been conferred upon Keldysh are the Order of Labor Red Banner (in 1943, 1945 and 1953) and the Order of Lenin (in 1945, 1954 and 1960). He received a Stalin Prize in 1941 for scientific works in predicting the breakdown of airplanes. In 1960 he was made a member of the Presidium of the Committee for Awarding Lenin Prizes in the Field of Science and Engineering of the Council of Ministers U.S.S.R.

Keldysh's interests in mechanics and mathematics are theory of oscillations, aerodynamics, theory of waves on the surface of a heavy liquid, impact against water, investigation of an approximate integration of differential equations, potential theory, conformal representation mapping, theory of eigenfunctions and eigenvalues of parameters for non self-conjugate differential equations. In hydromechanics, he worked on the theory of non-stabilized motion of a wing. He proved, for gas, the theorem of Zhukovskii. He presented a theory on the solvability of the Dirichlet problem in its dependence on boundary conditions. He solved the basic problems of the stability of solutions of the Dirichlet problem. Keldysh developed a theory of approximation of functions of a complex variable by a series of polynomials. Of considerable importance is the work of Keldysh on the theory, calculation and working out of methods for avoiding various types of vibration in an airplane. Since 1953 his papers have discussed such topics as thermal excitation of sounds, speed of approximation of functions by polynomials on arbitrary continua, point character of the spectrum of a certain class of matrices in an analytical space and series of rational fractions. He has been directing work on the theory of rocket propulsion and on the development of a ballistic theory of space flight. During September 1957, at a meeting celebrating the 100th anniversary of the birth of K. E. Tsiolkovskii, Keldysh spoke on the use of artificial earth satellites in scientific research.

In June 1961, Keldysh received the Hammer and Sickle Gold Medal, and in March 1962, he was elected a delegate from R.S.F.S.R. to the Supreme Soviet.

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KELL', NIKOLAI GEORGIEVICH (Geodesy and Photogrammetry
Scientist)

N. G. Kell' was born January 20, 1883. In 1915 he graduated from Petrograd (Leningrad) Mining Institute, and in 1923 he became a professor at this Institute. He worked as a topographer in 1908-1911 on the Kamchatka expedition of the Russian Geographical Society, and in 1922 he was made a member of this society. In 1921 he was made Head of the Chair of Geodesy at the Leningrad Mining Institute. In 1917-1922, Kell' worked at the Ural Mining Institute in Sverdlovsk and in 1919-1920 was the Director. In 1947 he became Chief of the Laboratory on Aeromethods, and in 1958 he was chairman of the Joint Committee on Aerial Survey. Since 1946, he has been a Corresponding Member of the U.S.S.R. Academy of Sciences.

Kell's researches are in geodesy, photogrammetry, development of aerial photogrammetric methods and their application in geographic and geological mapping.

As of 1961, Kell' was Chairman of the Interdepartmental Commission for Aerial Surveys.

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and V. G. Zdanovich, K. A. Zvonarev, A. N. Belolikov, N. A. Gusev. Higher Geodesy. Moscow: 1961.

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L. S. Khrenov. Nikolai Georgievich Kell'. Proceedings of the All-Union Geographic Society, 1953, 85, #3.

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KHARITON, YULII BORISOVICH (Nuclear Physicist)

Yu. B. Khariton was born February 27, 1904. In 1925 he graduated from Leningrad Polytechnic Institute. While still a student, in 1921, he began scientific work at the Laboratory of N. N. Semenov of the Leningrad Physico-Technical Institute. In 1927-28 Khariton was sent to England where he studied the scintillation of alpha-particles under E. Rutherford. In 1931 he began working at the Institute of Chemical Physics of the U.S.S.R. Academy of Sciences. He was elected a Corresponding Member of the U.S.S.R. Academy of Sciences in 1943 and an Academician in 1953. He was also a Deputy to the U.S.S.R. Supreme Soviet, and was elected again in March 1962.

The first investigation of Khariton was the study of condensation of metallic vapor molecular beams in a vacuum on cooled surfaces. The result was the basis for the theory on condensation, later developed by Khariton and other Soviet scientists. In 1925 Khariton, while studying the phenomena of chemiluminescence of vapors of phosphorus at low oxygen pressures, discovered the phenomenon of the lower limit of cold ignition of phosphorous vapors. He showed that below a certain pressure of oxygen, the reaction of oxidation does not take place, and above a certain pressure, moves with noticeable speed. Together with Ya. B. Zel'dovich, Khariton made calculations for a chain reaction of uranium fission. Khariton, and associates, worked on the theory of excitation and spreading of explosion detonations; in particular he established the principle

which links the explosive ability of substances with the speed of the chemical reaction in the explosive wave front.

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and Ya. B. Zel'dovich. On the chain decay of uranium under influence of slow neutrons. Zhur. Eksptl. i Teoret. Fiz., 1940, 10, #1.

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KHARKEVICH, ALEKSANDR ALEKSANDROVICH (Radio technologist)

A. A. Kharkevich was born in 1904. In 1930 he graduated from the Leningrad Electro-Technical Institute. He worked, 1932-41, at various teaching institutions of Leningrad, and from 1941-44 he was at the Physico-Technical Institute of Leningrad, Kazan', and Moscow. From 1944-48, he was professor and departmental head of the L'vov Polytechnical Institute, and from 1948-52, he was the departmental Director of the (Ukraine) U.S.S.R. Academy of Sciences Institute of Physics in Kiev. In 1952-54, Kharkevich was professor and departmental chairman of the Electro-Technical Institute of Communications in Moscow. In 1954 he started to work in the Laboratory on the Treatment of Scientific Communication Problems (now the Laboratory on Systems of Information Transmission), where he became Chief in 1957. He was elected in 1960 a Corresponding Member of the U.S.S.R. Academy of Sciences. In 1962, Kharkevich was appointed acting Director of the U.S.S.R. Academy of Sciences Institute of Problems of Information Transmission.

Kharkevich's works deal with the theory, design and construction of electro-acoustical apparatus.

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KHEL'KVIST, GERMAN AVGUSTOVICH (Oil Geologist)

G. A. Kehl'kvist was born October 5, 1894. He graduated from Tomsk Technological Institute in 1923 and in 1924 worked in the oil industry. From 1950 he worked in scientific research institutions. In 1956-58 he was professor at Moscow Oil Institute. He was made Director of the Sakhalin Complex Scientific Research Institute of the U.S.S.R. Academy of Sciences in 1957. Khel'kvist has been a member of the Communist Party of the Soviet Union since 1946. In 1958 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences. He received in 1958 a Stalin Prize.

Khel'kvist took part in studying and prospecting for oil deposits of the Azerbaijan S.S.R., Northern Caucasus, the Ukraine, and the territory along the Volga and Sakhalin. His scientific research is devoted to the study of oil and gas deposits, the relationships of oil beds, and methodology of prospecting. Khel'kvist introduced the concept of zoned oil beds.

Bibliography:

Zoned Oil Deposits and the Methodology of Prospecting. Moscow-Leningrad: 1944.

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and A. V. Ul'yanov. Geology of Oil and Gas Deposits. Moscow: 1955.

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KHITRIN, LEV NIKOLAEVICH (Heat Engineer)

L. N. Khitrin was born February 20, 1907. He graduated in 1930 from Moscow University. From 1931 to 1941 he worked at the All-Union Heat Engineering Institute. He taught at Moscow University in 1936 and in 1953 became professor. In 1945 he began working at the Institute of Energetics of the U.S.S.R. Academy of Sciences. Since 1953 he has been a Corresponding Member of the U.S.S.R. Academy of Sciences. He received in 1950 a Stalin Prize.

His main works deal with the physics of burning processes. He worked on the theory of heterogeneous burning, new intensive methods of burning, and on complex electro-technological methods of utilizing fuels. He studied carbon burning processes; his results, together with those of A. S. Predvoditelev and others, appeared in 1949 in the treatise, "Burning of Carbon". He has been engaged in developing new, highly intensive furnaces.

Bibliography:

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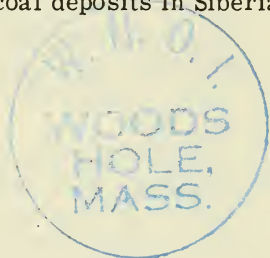
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KHOMENTOVSKII, ALEKSANDR STEPHANOVICH (Geologist)

A. S. Khomentovskii was born in 1908. In 1930 he graduated from the Siberian Technological Institute in Tomsk. From 1930-37 he directed geological research parties. He taught, 1938-41, at the Krasnoyarsk State Pedagogical Institute. He served in the Soviet Army from 1941-43. He worked, 1943-1954, at the "Yuzhuraluglerazvedka" (South Urals Coal Prospecting) trust in Orensburg. From 1955-57 he was chairman of the department on Geology and Useful Minerals at the Saratov State University; and from 1957 to 1960, of the Perm Mining Institute. In 1960 he became chairman of the Presidium of the Far-Eastern branch of the U.S.S.R. Academy of Sciences. Since 1941 he has been a member of the Communist Party of the Soviet Union. In 1950 Khomentovskii was awarded a Stalin Prize. He was elected in 1960 a Corresponding Member of the U.S.S.R. Academy of Sciences.

Khomentovskii's main works deal with the classification, tectonics, formation and distribution of coal deposits in Siberia and the Urals.

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KHRENOV, KONSTANTIN KONSTANTINOVICH (Electric
Welding Engineer)

K. K. Khrenov was born February 25, 1894. He graduated in 1918 from Petrograd Electrotechnical Institute and in 1921-25 taught there. From 1928 to 1947 he taught at the Moscow Electromechanical Institute of Railroad Transport Engineers, where in 1933, he was made professor. In 1931 he also began teaching in the Moscow Higher Technical School. He worked in the Institute of Electric Welding of the Ukrainian Academy of Sciences in 1945-1948; and in 1952 he began working in the Institute of Electrotechnics of the Ukrainian Academy of Sciences. In 1947 he was made professor at Kiev Polytechnic Institute. Khrenov has been an Academician of the Ukrainian S.S.R. Academy of Sciences since 1945 and since 1953 a member of its presidium. In 1953 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences. Since 1955, he has been a member of the Communist Party of the Soviet Union.

He is an Honored Scientist of the Ukrainian S.S.R. and in 1946 was the recipient of a Stalin Prize.

The basic works of Khrenov are concerned with electric welding of metals. He originated methods of electric welding and cutting of metals under water. These methods are being broadly applied in the restoration of bridges and the repair of ships.

As of 1961, Khrenov was Academician Secretary of the Technical Science Department of SSR Ukrainian Academy of Sciences.

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KHRISTIANOVICH, SERGEI ALEKSEEVICH (Mechanical Engineer)

S. A. Khristianovich was born October 27, 1908. In 1930 he graduated from the Leningrad Institute and then worked in the State Hydrological Institute in Leningrad. From 1937 to 1953, he was at the Central Aerohydrodynamic Institute. He was a Member of the Presidium of the U.S.S.R. Academy of Sciences in 1946 to 1956. In 1956 he started working in the Institute of Chemical Physics of the U.S.S.R. Academy of Sciences.

Khristianovich has been a member of the Communist Party of the Soviet Union since 1949. He was elected a Corresponding Member of the U.S.S.R. Academy of Sciences in 1939, and in 1943 an Academician. In 1942, 1946, and 1952 he was awarded Stalin Prizes.

Khristianovich's field of work is mechanics of liquids and gases. In his monograph, "Irregular Movement in Canals and Rivers" (1938) he solved the problem of spreading and reflection of waves and applied these results to hydrotechnical structures. In plasticity, he solved the surface problem of the determination of the tension arising in a plastic medium in terms of the forces set in a closed contour. On the theory of filtration, Khristianovich wrote in 1940 "The Movement of Subsoil Waters, Not Following the Darcy Law" and in 1941 "On the Movement of Aerated Liquids in Porous Rocks." In aerodynamics, he studied the flow of gas at high subsonic speeds around a profile in the presence of lifting force, and worked out a method of calculating the effect of compressibility on the characteristics of wing profiles. He carried out important studies on the flow of gas at supersonic speed, and also in aviation technology.

As of 1961, Khristianovich was a Vice President of the Siberian Department of the U.S.S.R. Academy of Sciences, Director of the Institute of Theoretical and Applied Mechanics (Novosibirsk), and a Member of the Presidium of the U.S.S.R. Academy of Sciences.

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KHRUSHCHOV, GRIGORII K. (Deceased, December 22, 1962.)

G. K. Khrushchov was born March 3, 1897. He graduated in 1919 from Moscow University and until 1930 continued to work there. From 1933 to 1945 he was professor at the Moscow Animal-Veterinary Institute. In 1939-1949 he was Director of the Institute of Cytology, Histology and Embryology. Khrushchov

became a professor in 1945 at the second Moscow Medical Institute. In 1949 he was made Director of the Severtsov Institute of Morphology of Animals of the U.S.S.R. Academy of Sciences. He has been a member of the Communist Party of the Soviet Union since 1940. He was elected, in 1953, a Corresponding Member of the U.S.S.R. Academy of Sciences. In 1947 he was an Honored Scientist of the R.S.F.S.R. The U.S.S.R. Academy of Sciences awarded him, in 1949, the I. I. Mechnikov Prize.

Krushchov has worked in comparative and experimental histology and cytology. He has been working on the stimulating role of leucocytes of blood in restoration processes.

Bibliography:

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KIBEL', IL'YA AFANAS'EVICH (Meteorologist)

I. A. Kibel' was born October 19, 1904. He graduated from the University of Saratov in 1925. From 1925 to 1943, he worked at the Main Geophysical Observatory. In 1943, he started to work at the Central Institute of Weather Forecasting in Moscow, where he was made a professor in 1949. In 1941, he was awarded a Stalin Prize, and in 1943, he was elected to the U.S.S.R. Academy of Sciences as a Corresponding Member.

Kibel' compiled a closed simplified system of equations in dynamic meteorology in order to obtain some specific solutions in this system. In 1940 he obtained the first approximate solution to the problem of precalculating a field of pressure and temperature for a time interval of approximately twenty-four hours, basing the proximity of actual wind to geostrophic wind.

Bibliography:

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KIKOIN, ISAAK KONSTANTINOVICH (Physicist)

I. A. Kikoin was born March 28, 1908. In 1932 he graduated from Leningrad Polytechnic Institute. He then taught and did research in Leningrad and Sverdlovsk until 1944 when he became professor at the Moscow Engineering and Physics Institute. In 1943 he was elected Corresponding Member of the U.S.S.R. Academy of Sciences and in 1953 Academician. He was awarded in 1942 a Stalin Prize.

Most of Kikoin's work has been on electric and magnetic properties of metals and semiconductors, particularly liquid metals. He measured the gyromagnetic coefficient for superconductors and proved that the Hall effect in ferromagnetic substances is affected by magnetizing the material. He discovered a photomagnetic effect; the production of an electromotive force when a conductor, placed in a magnetic field, is exposed to light. He showed experimentally that the absolute charge of a positron is equal to that of an electron. Kikoin also developed methods for measuring electric quantities in high current direct current systems and then found application in electrolysis (Stalin Prize, 1942).

Bibliography:

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Biography:

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KIRILLIN, VLADIMIR ALEKSEEVICH (Thermal Physicist)

V. A. Kirillin was born January 20, 1913. He graduated in 1936 from Moscow Energetics Institute. He taught at this Institute in 1938-1941 and again in 1943, and in 1952 became professor. In 1954-1955 he was Deputy Minister of Higher Education in the U.S.S.R. In 1954-1956 he was Deputy Chairman of the State Committee on New Technology. He became, in 1955, Chairman of the Department of Science of Universities, Technical Schools, and Colleges of the Central Committee of the Communist Party. He has been Chief of the Laboratory on High Temperatures at the Moscow Institute of Energetics. At the XXth Congress of the Communist Party he was chosen a member of the Inspection Commission of the Central Committee of the Communist Party. Since 1937 he has been a member of the Communist Party. In 1953 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences and in June 1962 an Academician. In March 1962, Kirillin was elected to the Council of Nationalities. From 1956 to 1961 he was a member of the Central Committee on Revisions of the Communist Party. He was elected, in 1961, a Candidate Member of the Central Committee of the Communist Party and a Deputy to the 6th session of the Supreme Soviet. He received, in 1951, a Stalin Prize, and in 1959, a Lenin Prize.

Kirillin has studied thermal and physical properties of heat carriers in power plants, in wide intervals of temperature and pressure. Kirillin has also carried out experimental and theoretical research of the thermal properties of water and steam. He and his associates developed new standard data on water and steam, necessary for modern designing in super-pressure steam electric power stations.

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KISHKIN, SERGEI TIMOFEEVICH (Metallurgist)

S. T. Kishkin was born in 1906. In 1931 he graduated from the Bauman Moscow Higher Technical Institute. He has been a member of the Communist Party since 1939. He was elected, in 1960, to the U.S.S.R. Academy of Sciences as a Corresponding Member.

Kishkin's work is in the field of metallurgy and metal sciences.

Bibliography:

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KISUN'KO, GRIGORII VASILEVICH (Radio Technologist)

G. V. Kisun'ko was born in 1918. In 1938 he graduated from the Voroshilovgradskii University. From 1938-41, he was an instructor at the Leningrad Pedagogical Institute. He has been a member of the Communist Party of the Soviet Union since 1944. He was elected, in 1958, a Corresponding Member of the U.S.S.R. Academy of Sciences.

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KNUNYANTS, IVAN LYUDVIGOVICH (Organic Chemist)

I. L. Knunyants was born June 4, 1906. In 1928 he graduated from Moscow Technological College and continued work there. He began, in 1931, working at the Institute of Organic Chemistry of the U.S.S.R. Academy of Sciences. In 1941, he became a Member of the Communist Party of the Soviet Union. From 1946 he was a Corresponding Member of the U.S.S.R. Academy of Sciences until 1953 when he was made an Academician. Three times, 1943, 1948, 1950, he won a Stalin Prize.

Knunyants synthesized pyridine analogs of triphenylmethane and carbocyanine dyes and studied the relation of their color and structure. He produced a series of new transformations of aliphatic oxides, which led to the synthesis of gamma-acetopropyl alcohol; this synthesis is used in production of vitamin B₁ and in anti-malaria substance. Also he studied methods of introducing fluorine into organic compounds, such as the reaction of aliphatic oxides with hydrogen fluoride. At present he is concerned with reactions of fluoroolefins. Many of his inventions, such as photosensitizers and caprone, are used in Soviet industry.

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KOBZAREV, YURII BORISOVICH (Radio Engineer)

Yu. B. Kobzarev was born December 8, 1905. After he graduated from Khar'kov University in 1926, he worked until 1943 at the Physico-Technical Institute of the U.S.S.R. Academy of Sciences in Leningrad. From 1944 to 1955 he was professor at Moscow Institute of Energetics. In 1955 he began working at the Institute of Radio Engineering and Electronics of the U.S.S.R. Academy of Sciences. He has been a Corresponding

Member of the U.S.S.R. Academy of Sciences since 1953. In 1941 he was awarded a Stalin Prize.

In 1926-31 Kobzarev developed frequency stabilization by means of quartz crystals in tube generators. He worked on the theory of oscillation of oscillator plates. Kobzarev studied the phenomena in non-linear systems and indicated the high efficiency of "quasi-linear" method of treating these phenomena based on the concept of complex amplitudes and resistance. He played an active role in the development of radar.

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KCHESHKOV, KSENOFONT ALEKSANDROVICH (Chemist)

K. A. Kocheshkov was born December 12, 1894. He graduated from Moscow University in 1922 and in 1935 became a professor there. In 1946 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences. He was awarded a Stalin Prize in 1948.

The investigations of Kocheshkov deal with the chemistry of metallo-organic compounds. He discovered new methods of synthesis of compounds of lead, tin, silicon, alkali metals, zinc, thallium, antimony, bismuth. He also developed syntheses for amines and mercaptans using metallo-organic compounds. Kocheshkov is one of the editors for "Synthetic Method in the Area of Metallo-Organic Compounds."

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and A. N. Nesmeyanov. Synthetic Methods in the Area of Metallo Organic Compounds. #4. Moscow-Leningrad: 1945.
and A. P. Skoldinov. Synthetic Methods in the Area of Metallo Organic Compounds. #5. Moscow-Leningrad: 1947.
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and T. V. Talalaeva. Synthetic Methods in the Area of Metallo Organic Compounds. #1. Moscow-Leningrad: 1949.

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KOCHETKOV, NIKOLAI KONSTANTINOVICH (Organic Chemist)

N. K. Kochetkov was born in 1915. In 1939 he graduated from the M. V. Lomonosov Moscow Institute of Fine Chemical Technology. He served in the Soviet Army from 1939 to 1945. In 1945-1959, he was an assistant, docent, and then professor, in 1956, at the Moscow State University. In 1959 he became deputy Director and Chief of the Laboratory on Hydrocarbons and Nucleotides at the U.S.S.R. Academy of Medical Sciences Institute of Natural Compound Chemistry. He was also, from 1954 to 1960, Director of the chemical section at the U.S.S.R. Academy of Medical Sciences Institute of Pharmacology and Chemotherapy. He has been a Corresponding Member of the U.S.S.R. Academy of Medical Sciences since 1957, and was elected in 1960 to the U.S.S.R. Academy of Sciences as a Corresponding Member.

Kochetkov's work is concerned with organic synthesis, investigation and synthesis of new medicinal preparations, and studies of carbon and carbon containing compounds and nucleotides.

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KOCHINA, PELAGEYA YAKOVLEVNA (Hydrodynamicist)

P. Ya. Kochina was born May 1, 1899. In 1921 she graduated from Petrograd University. From 1919 she worked in the main geophysical observatory. She taught at the Ways of Communication Institute, at the Institute of Civil Fleets, and at Lenin-grad University where she was made professor in 1934. Beginning in 1935 she worked in the Mathematics Institute and subsequently in the Institute of Mechanics of the U.S.S.R. Academy of Sciences. She was elected a Corresponding Member of the U.S.S.R. Academy of Sciences in 1946 and in 1958 an Academician. In 1945 she was awarded a Stalin Prize.

Kochina's major interest is the theory of filtration. She has solved many important problems, which are associated with the movement of ground waters and oil in porous media. In 1952, she wrote a monograph on the "Theory of Ground Water Movement," summarizing the Soviet work in the field of filtration. She has also worked in dynamic meteorology, stability of plates, and theory of tides in basins. Kochina was the editor of the first collection of the works of Kovalevskaya, the Russian mathematician, and published articles of Kovalevskaya's life and work.

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Some Problems of Flat Moving Ground Waters. Moscow-Leningrad: 1942.

Life and Works of S. V. Kovalevskaya, 1850-1891 (Centennial since the date of birth). Moscow-Leningrad: 1950.

Biography:

To the 50th Anniversary since the date of birth of P. Ya. Polubarinova-Kochina. Priklad. Mat. i Mekh., 1949, #3.

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KOLMOGOROV, ANDREI NIKOLAEVICH (Mathematician)

A. N. Kolmogorov was born April 25, 1903. In 1925 he graduated from Moscow University where he was a student of N. N. Luzin (1883-1950), Professor at the University. Kolmogorov became a professor there in 1931. In 1939 he was elected an Academician of the U.S.S.R. Academy of Sciences. He was awarded in 1941 a Stalin Prize.

Kolmogorov's scientific works began in the field of the theory of a real variable, where he worked on the convergence of trigonometric series, the theory of measure, generalization of the concept of the integral and general theories of operation on sets. Returning in 1956 to the theory of functions, Kolmogorov obtained important results on the representability of functions of a number of variables by superposition of functions with a smaller number of variables. Kolmogorov made contributions to constructive logic; in topology he created the theory of the so-called "upper" or V-homologies. Kolmogorov also worked on the theory of the approximation of functions and functional analysis. His more outstanding works are concerned with the theory of probability, where he, together with A. Ya. Khinchin, began from 1925 to apply the methods of the theory of functions of a real variable. This permitted the solution of some difficult problems and construction of a system of axiomatic foundation to the theory of probability (1933). From the beginning of the 1930's, analytical methods which were found essential for constructing the theory of the Markov processes with continuous time predominate in the works of Kolmogorov. Later he developed the theory of stationary, accidental processes, which led to results used in automatic control, and to the establishment (together with a group of students) of a theory of "branching," accidental processes. Kolmogorov worked together with A. M. Obukhov on the statistical theory of turbulence; he also investigated the theory of fire, statistical methods of controlling mass production, the theory of conveying information along communication channels. He is interested in the teaching of mathematics in secondary schools. Among his students are:

A. I. Mal'tsev, S. M. Nikol'skii, I. M. Gel'fond, B. V. Gnedenko, A. M. Obukhov, M. A. Millionshchikov, E. B. Dynkin, Yu. V. Prokhorov.

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Biography:

P. A. Aleksandrov and A. Ya. Khinchin. Andrei Nikolaevich Kolmogorov (On the 50th Anniversary since the date of birth). Uspekhi Mat. Nauk, 1953, 8, #3 (contains bibliography of the works of Kolmogorov).

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KOLOSOV, NIKOLAI GRIGOR'EVICH (Histologist)

N. G. Kolosov was born April 29, 1897. In 1924 he graduated from and continued to work at Kazan' University. He was made professor at Stalingrad Institute in 1940, and in 1945-1950 at Saratov Medical Institute. In 1950 he began work at the Institute of Physiology of the U.S.S.R. Academy of Sciences. He became a professor, in 1953, at the Leningrad University. In 1945 he was elected a Corresponding Member of the U.S.S.R.

Academy of Medical Sciences and in 1953 Corresponding Member of the U.S.S.R. Academy of Sciences.

Kolosov is a specialist in the area of neurohistology. He has been studying the structure of the autonomic nervous system and its interactions with the central nervous system; he has been an advocate of the neuron structure theory of the nervous system. He studied in detail the double innervation of the alimentary canal and pelvic organs. Kolosov has also worked on the afferent innervation of the human alimentary canal.

In recent years he has studied afferent innervation of vegetative ganglia and vegetative neurons.

Bibliography:

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Afferent Innervation of the Human Alimentary Canal.

Moscow-Leningrad: 1962.

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KONDRAT'EV, VIKTOR NIKOLAEVICH (Physical Chemist)

V. N. Kondrat'ev was born February 1, 1902. He graduated from the Leningrad Polytechnical Institute in 1924 and then worked at the Physico-Technical Institute of the U.S.S.R. Academy of Sciences. In 1931, he began working at the Institute of Chemical Physics of the U.S.S.R. Academy of Sciences. Also he has been professor at the Moscow Engineering Physics Institute. In 1948 he became a member of the Communist Party of the Soviet Union. From 1943 to 1953 he was a Corresponding Member of the U.S.S.R. Academy of Sciences, and in 1953 he became an Academician. In 1944 he received a Stalin Prize.

Kondrat'ev has worked in chemical kinetics, molecular spectroscopy and structure, and photochemistry. He studied the elementary processes during chemical transformation. Also he developed methods of determining concentrations and reaction velocity of free atoms and radicals, which are intermediate in photochemical reactions and combustion processes.

Kondrat'ev showed that the velocity of an over-all reaction is

determined by the speed of reactions of free radicals whose concentration is considerably greater than at equilibrium. In the field of molecular structure, Kondrat'ev with aid of the spectroscopic method, determined the heats of disassociation and established a geometric structure of a series of molecules. He also worked out an optical method for studying unstable conditions of molecules and photo-chemical dissociation of molecules.

In 1961, Kondrat'ev was elected to the bureau, the executive committee and editorial board of the International Union of Pure and Applied Chemistry.

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Bibliography:

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Kondrat'ev, Viktor Nikolaevich. *Vestnik Akad. Nauk S.S.S.R.*, 1953, #12.

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KONOBEEVSKII, SERGEI TIKHONOVICH (Physicist)

S. T. Konobeevskii was born April 26, 1890. In 1913 he finished at Moscow University. From 1919-23, he taught at the University of National Economy in Moscow. He worked, in 1923-1929, at the All-Union Technical Institute, and in 1929-1941, at the State Institute of Dyed Metals. In 1926 he began teaching at Moscow University where, in 1935, he became a professor. In 1948 he started work at various institutions of the U.S.S.R. Academy of Sciences. Since 1946 he has been a Corresponding Member of the U.S.S.R. Academy of Sciences. In 1948 he became a member of the Communist Party of the Soviet Union.

Konobeevskii's main work deals with X-ray-structural investigation of metals and alloys and their structural change during plastic deformation, tempering, and phase transformations. He developed a theory of aging of alloys, the decomposition of solid solutions, and the effect of radiation on materials.

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KONSTANTINOV, BORIS PAVLOVICH (Physicist)

B. P. Konstantinov was born July 6, 1910. He graduated in 1929 from the Mechanical-Mathematical Faculty of the Leningrad Polytechnic Institute. Beginning in 1930 he worked at the Leningrad Electro-Physical Institute as well as at some other scientific research institutes. As of 1961, he has been Director of the Leningrad Physico-Technical Institute of the U.S.S.R. Academy of Sciences where he has worked since 1940. In 1947 he became a professor at Leningrad Polytechnic Institute. He was elected Corresponding Member of the U.S.S.R. Academy of Sciences in 1953 and in 1960 Academician.

Konstantinov's main investigations are theoretical and applied acoustics and physical chemistry. In 1934 he developed a quantitative theory of the sound of a propeller. He investigated in 1936 the equation of non-linear acoustics. In 1935-43 he studied auto-oscillatory phenomena and the process of sound formation in musical instruments and in sound signaling devices, non-planar waves in wind instruments, and resonant absorption. He also studied the influence of viscosity and thermal conductivity on the propagation and absorption of sound in an organic medium. Konstantinov obtained results important for measurement in acoustics.

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KOROLEV, SERGEI PAVLOVICH (Mechanics Specialist)

S. P. Korolev was born December 30, 1906. In 1930 he graduated from the Moscow Higher Technical School. He has been a member of the Communist Party of the Soviet Union

since 1953. In 1953 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences, and in 1958 an Academician.

The basic works of Korolev are in mechanics.

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KOROTKOV, ALEKSEI ANDREEVICH (Organic Chemist)

A. A. Korotov was born February 25, 1910. He graduated in 1938 from the Leningrad Chemico-Technological Institute. From 1931-45 he worked in synthetic rubber plants. In 1945 he began working at the All-Union Scientific Research Institute of Synthetic Rubber and in 1953 at the Institute of High Molecular Compounds of the U.S.S.R. Academy of Sciences. Korotov has been a member of the Communist Party of the Soviet Union since 1942. In 1958 he became a Corresponding Member of the U.S.S.R. Academy of Sciences.

Korotkov is concerned with reprocessing by-products from production of synthetic rubber, synthesis based on ethylene oxide, the study of production of isoprene, and the catalytic polymerization of vinyl compounds and bi-ethylene hydrocarbons. He worked out a method for obtaining a polyisoprene synthetic rubber, with properties similar to those of natural rubber.

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KORSHAK, VASILII VLADIMIROVICH (Organic Chemist)

V. V. Korshak was born January 9, 1909. He was a student of P. P. Shorygin (1881-1939, organic chemist). He graduated in 1931 from the Moscow Chemico-Technological Institute and in 1942 became a professor at this Institute. In 1935 he also

started working at the Institute of Organic Chemistry of the U.S.S.R. Academy of Sciences. In 1954 he began work at the Institute of Organo-Elemental Compounds of the U.S.S.R. Academy of Sciences. Korshak has been a member of the Communist Party of the Soviet Union since 1940. In 1953 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences. He was awarded Stalin Prizes in 1949 and in 1951.

Korshak's main works deal with the chemistry of high molecular compounds. He investigated the process of polycondensation of dicarboxylic acids with diamines and glycols, and also dihalide derivatives with aromatic hydrocarbons. He worked out a theory of linear polycondensation. He proposed a classification and nomenclature for high molecular compounds. A part of Korshak's work deals with the mechanism of the Friedel-Crafts-reaction and with methods for synthesis of various organic substances.

In August 1956, Korshak visited the United States to attend the Sixth International Conference on Coordination Compounds, New York.

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KORZHINSKII, DMITRII SERGEIVICH (Geographer and Petrographer)

D. S. Korzhinskii, son of S. I. Korzhinskii (1861-1900,

Russian botanist) was born September 13, 1899. After graduating from the Leningrad Mining Institute in 1926, he worked on the Geological Committee. Then, until 1937, he was with the Central Scientific Research Geological Survey Institute. In 1937 he began working in the Institute of Geology at the U.S.S.R. Academy of Sciences, and in 1956 in the Institute of Geology for Ore Deposits, Petrography, Mineralogy and Geochemistry of the U.S.S.R. Academy of Scientists. Also during these years, 1929 to 1940, he taught at the Leningrad Mining Institute. Korzhinskii became a Corresponding Member of the U.S.S.R. Academy of Sciences in 1943, and in 1953 an Academician. He was awarded in 1946, a Stalin Prize, in 1949, the A. P. Karpinskii Prize by the U.S.S.R. Academy of Sciences, and in 1958, a Lenin Prize.

Korzhinskii studied pre-Cambrian crystalline rock formations and associated mineral resources of Yakutiya and Eastern Siberia, Skarn ore beds of the Urals, and Central Asia. His main works are devoted to physico-chemical analysis of the process of mineral formation (mainly the metamorphic and metasomatic processes). He has studied the thermodynamics of natural systems and methods of analyzing mineral paragenesis.

As of November 1962, he has been made chief editor of the journal, *Geology of Ore Deposits*.

Bibliography:

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Sketch of metasomatic processes. Main Problems in the Study of Magmatogene Ore Beds, 1955.

Physico-Chemical Basis in Analyzing Mineral Paragenesis. Moscow: 1957.

Biography:

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KOSTENKO, MIKHAIL POLIEVKTOVICH (Electrical Engineer)

M. P. Kostenko was born December 16, 1889. Before graduating in 1918 from the Electrical Engineering Institute of the Petersburg Polytechnic Institute, Kostenko had been banished for a period to a remote corner of the Urals by the Tsarist Government for having participated in student revolutionary demonstrations. After graduating with distinction, he remained at the Institute to prepare for teaching activities. In 1930, he was appointed to the Chair of Electrical Machines in the M. I. Kalinin Polytechnic Institute. More than 400 electrical engineers (specialists in constructing electrical machines) have graduated from there under his direction. Kostenko was Chief Electrician of the Kharkov Electromechanical Plant, and, in 1942-44, professor in the Central Asiatic Industrial Institute (Tashkent). He is Director of the Institute of Electromechanics of the U.S.S.R. Academy of Sciences. He has consulted and taught in Rumania, Hungary, Bulgaria, and Poland. He was a delegate to the Paris Conference on Large-Scale Electrical High-Tension Systems. In 1939 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences and in 1953 an Academician. He is an Honored Scientist of the Uzbek S.S.R. He was a Deputy of the Supreme Soviet of the U.S.S.R., fifth convocation. In 1949 and 1951, Kostenko was awarded Stalin Prizes and in 1958 a Lenin Prize.

Under the Lenin Plan, GOELRO (State Plan for Electrification of Soviet Russia), Kostenko was one of the originators (and is chief) of the office for new designs at the "Electrosila" Plant, where he worked from 1929-30, and where he has been consultant since 1932. In this connection, the office designed four of the eight generators for the then new Volkhov hydro-electric power plant. Their success assured the beginning of Soviet manufacture of heavy power machinery construction. Similarly, Kostenko has participated in the development of all the basic electrical machines produced in Russia: generators for plants such as the Dneprovskaya, Ribinskaya, Uglichskaya, and the Volga Cascade. He was consulted in the manufacture of motors for the atomic ice-breaker "Lenin," and for generators of the Kuibishev and Stalingrad power stations. He is a member of the technical council of Electrosila.

At the Institute of Electromechanics of the Academy of Sciences of the U.S.S.R., located in laboratories in a private residence on the Palace Embankment of the Neva [Leningrad], Kostenko works on the combined operation of AC and DC transmission lines and the automatic regulation of superpower generators. The laboratories contain models of the Stalingrad power stations and of the future Volga, Krasnoyar, Bukhtarin, and Bratskaya plants. Stalingrad will transmit AC and DC simultaneously; AC to Moscow and DC to the Don Basin. The modelling methods are used there to work out the electrification of the main Russian railroad lines under the Seven Year Plan. Kostenko is working on problems of the utilization of alternating current electric traction for this purpose.

Kostenko's basic works are concerned with the theory of electrical machines and methods for their experimental study and planning. He gave a theory of transformers, polyphase asynchronous and commutating machines; worked out an original scheme of commutative generators for alternating current. He has been concerned with electric traction using alternating current, electrodynamic modelling of energy systems in connection with the stability and reliability of the operation of distant electric transmission, and with the rectification of alternating current. He has written a monograph on the universal transformer. In all, he has written over 100 scientific works, which have become indispensable manuals for Soviet engineers, especially his Commutators, printed a quarter of a century ago.

As of 1961, Kostenko was a Member of the Presidium of the U.S.S.R. Academy of Sciences.

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Alternating Current Commutator Machines, Part 1. Leningrad: 1933.

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Designing electrical equipment in irradiation of parallel stability of energy systems for long-distance transmission.

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and A. E. Alekseev. Turbogenerators. Leningrad-Moscow: 1933.

Biography:

Kostenko Mikhail Polievktovich. Vestnik Akad. Nauk S.S.S.R., 1954, #3, 52.

Electric machine-building. Trudy Lenin. politekh. inst., 1953, #3. (This issue is dedicated to Prof. M. P. Kostenko in connection with his 30th year of scientific activity).

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KHOSTENKO, MIKHAIL VLADIMIROVICH (Power Specialist)

In June 1962, M. V. Khostenko was elected Corresponding Member of the U.S.S.R. Academy of Sciences.

KOSYGIN, YURII ALEKSANDROVICH (Geologist)

Yu. A. Kosygin was born January 22, 1911. After graduating from Moscow Oil Institute in 1931, he worked in the oil industry. From 1935 to 1941, he worked in the Institute of Fuel Minerals of the U.S.S.R. Academy of Sciences and at the Moscow Oil Institute. He began working, in 1945, at the Geological Institute of the U.S.S.R. Academy of Sciences. Since 1958 he has been a Corresponding Member of the U.S.S.R. Academy of Sciences.

Kosygin has studied the tectonics of platforms and foredeeps, mainly in oil-bearing regions. His works on salt tectonics facilitated recognition of regularities in arrangement of oil deposits on salt domes. He has also studied oil-bearing deposits and the presence of gas in various regions of the U.S.S.R. He took part in compiling tectonic maps of the U.S.S.R.

In May 1960, Kosygin visited the U. S. to participate in geological studies at the U. S. Geological Survey, Denver, Colorado.

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KOTEL'NIKOV, VLADIMIR ALEKSANDROVICH (Radio Engineer)

V. A. Kotel'nikov was born August 24, 1908. After graduating from Moscow Institute of Energetics, he worked at the Radio-engineering and Electronics Institute of the U.S.S.R. Academy of Sciences and became the Director in 1954. Since 1948 he has been a member of the Communist Party of the Soviet Union. In 1953 Kotel'nikov was elected an Academician of the U.S.S.R. Academy of Sciences. He received Stalin Prizes in 1943 and in 1946.

Kotel'nikov has been concerned with errors in radio reception and with the development of radio communication apparatus. He introduced (1946) the concept of potential error stability as characteristic of given method of transmission. The method of analysis suggested by him has had wide application and great significance for the development of new methods of radio communication. Under his direction, a multi-channel telephon-telegraphic line of radiocommunication on a single frequency side band was worked out.

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KOTON, MIKHAIL MIKHAILOVICH (Chemist)

M. M. Koton was born in 1908. In 1935 he graduated from the Leningrad State University. In 1934-36, he worked at the Leningrad Institute of High Pressures. He was, from 1936-39, at the Leningrad Pediatric Medical Institute, where in 1946, he became a professor, and then chairman of the Department of General and Analytical Chemistry. In 1937-52, he worked at the U.S.S.R. Academy of Sciences Leningrad Physico-Technical Institute. In 1952, he became Laboratory Chief at the U.S.S.R. Academy of Sciences Leningrad Institute of High Molecular Weight Compounds, where he was made deputy Director in 1959, and Director in 1960. From 1952-60, he was a professor at the Leningrad Polytechnical Institute. In 1960 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences.

Koton's main works are concerned with the chemistry of organic, metallo organic, and high molecular weight compounds.

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KOVALENKOV, VALENTIN IVANOVICH (Electrical Engineer)

V. I. Kovalenkov was born March 25, 1884. He graduated from Petersburg Electro-Technical Institute in 1909, and from Petersburg University in 1911. From 1940 to 1948 he worked at the Institute of Automation and Remote Control of the U.S.S.R. Academy of Sciences. In 1946 to 1956, he was Director of the U.S.S.R. Academy of Sciences Laboratory in Solving Problems in Wire Communications. He was awarded a Stalin Prize in 1941, and was awarded the title Honored Scientist of the R.S.F.S.R. in 1935. He holds the rank of Major General in the Technical Engineering Service, and has been a member of the Communist Party of the Soviet Union since 1945. He was elected, in 1939, to the U.S.S.R. Academy of Sciences as a Corresponding Member.

The main works of Kovalenkov are concerned with the theory of wire transmission of communication, to analysis of processes in them and to analyzing of magnetic chains. In addition, Kovalenkov worked on the origination of telephone translation (from 1909; first Soviet translation of the system of Kovalenkov was established in 1922 on the telephone line of Moscow-Petrograd). He has a series of inventions in the area of electrotechnics and sound movies.

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KOVALEV, NIKOLAI NIKOLAEVICH (Hydroturbine Specialist)

N. N. Kovalev was born February 22, 1908. After graduating from Leningrad Technological Institute in 1933, he worked at the Leningrad Metal Plant until 1959. From 1945 to 1959 he was the Chief Constructor of hydroturbines at this plant. He also taught at the Leningrad Polytechnic Institute. In 1959 he supervised the hydroturbine section in the Central Scientific Research Steam Turbine Institute. Kovalev has been a member of the Communist Party of the Soviet Union since 1942. In 1953, he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences. He received, in 1946 and 1951, State Prizes; in 1957, Hero of Socialist Labor award; in 1959, a Lenin Prize; and three medals.

The major works of Kovalev are devoted to designing hydroturbines. Under his leadership, swing-blade hydroturbines were built for hydroelectric power plants, among them the Volga and Dnieper. After World War II, he supervised the construction of hydroturbines for Mingechaur, Tsimlyanskaya and Kuibishev hydroelectric power stations.

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KOVAL'SKII, ALEKSANDR ALEKSEEVICH (Physical Chemist)

A. A. Koval'skii was born September 10, 1906. He graduated in 1930 from the Leningrad Polytechnic Institute. He had been working since 1929 at the Institute of Chemical Physics of the U.S.S.R. Academy of Sciences and in 1947 was made professor there; in 1957 he became Director of the Institute of Chemical Kinetics and combustion of the Siberian branch of the U.S.S.R.

Academy of Sciences. Koval'skii has been a member of the Communist Party of the Soviet Union since 1949. In 1958 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences.

Koval'skii's major works are in the field of kinetics and chemical reaction and nuclear physics. His investigations on the study of upper and lower limits of ignition constituted an important experimental base for establishing the theory of branching chain reactions. He studied the mechanism of a number of heterogeneous catalytic reactions. In the field of nuclear physics he conducted investigations on high energy particles.

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KOVDA, VIKTOR ABRAMOVICH (Soil Scientist)

V. A. Kovda was born December 29, 1904. He graduated in 1927 from Kuban Agricultural Institute in Krasnodar. In 1931 he became a scientific worker at the Soil Institute of the U.S.S.R. Academy of Sciences. He was professor at Moscow University in 1939-1941 and again in 1953. He was Director of the Institute of Botany and Pedology of the Uzbek branch of the U.S.S.R. Academy of Sciences in 1941-1942, and in 1943-1948 he taught at Moscow Hydromeliorative Institute. Kovda has been a member of the Communist Party of the Soviet Union since 1927. In 1953 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences. He was an Honored Scientist of the Uzbek S.S.R. in 1943, and in 1951 he received a Stalin Prize.

Kovda's main research interest is the study of soils of the Southern regions of the U.S.S.R., the solonetz, solonchak, and the soils of irrigated regions. His work elucidated the origin of solonetz and solonchak soils and suggested methods of their melioration. Kovda's investigations are important in reclamation of new lands, in the construction of irrigation systems,

and in melioration of solonetz soil and saline lands of the U.S.S.R.

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KRASIL'NIKOV, NIKOLAI ALEKSANDROVICH (Microbiologist)

N. A. Krasil'nikov was born December 18, 1896. He graduated in 1926 from Leningrad University and in 1929 began working at the Institute of Microbiology of the U.S.S.R. Academy of Sciences. For a number of years he participated in expeditions for the study of soil microorganisms in various parts of the country. Since 1946 he has been a Corresponding Member of the U.S.S.R. Academy of Sciences. He is also a member of Moscow State University. In 1951 he was awarded a Stalin Prize.

The scientific work of Krasil'nikov is the field of biology of microorganism, mainly the study of actinomycetes and bacteria. Krasil'nikov studied their structure, development, variability, physiological properties; he worked out a new principle of classification of actinomycetes and bacteria, and compiled tables for determining their series and species. He investigated the interrelation of microorganisms and higher plants and proposed a series of practical measures for increasing crop yields. He investigated antagonism between microorganisms and worked out the method for protecting plants against phytopathogenic bacteria and fungi. He also carried out investigations in antibiotics and described antibiotics of actinomycetic origin.

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KRASNOVSKII, ALEKSANDR ABRAMOVICH (Biochemist)

A. A. Krasnovskii was born in Odessa in 1913. He studied at the Mendeleev Chemical and Technological Institute, Moscow. In 1948 he earned his Doctor of Biological Science degree. He became, in 1951, a deputy Laboratory Chief in the U.S.S.R. Academy of Sciences Institute of Biochemistry. Krasnovskii was elected a Corresponding Member of the U.S.S.R. Academy of Sciences in 1962. In 1950 he was awarded the A. N. Bakh Prize.

Krasnovskii's main work is in chlorophyll chemistry and photosynthesis.

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Kreps' works are concerned with the comparative physiology and biochemistry of the nervous system and with functions of blood in breathing. He established the regulation of enzyme activity by the central nervous system. Kreps also studied the physiology of divers and marine chemistry. He designed oxyhemometers and utilized them in medical practice.

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KRUZHILIN, GEORGII NIKITICH (Heat Engineer)

G. N. Kruzhilin was born June 6, 1911. He graduated in 1934 from Leningrad Physico-Mechanical Institute. He worked at the Central Boiler-Turbine Institute in Leningrad in 1933-1946, and in 1936-1938 at its branch in the Urals. Since 1946 he has worked in various departments of the U.S.S.R. Academy of Sciences, and in 1955 at the Krizhanovskii Institute of Energetics. In 1960 he was made Director. Kruzhilin has been a member of the Communist Party of the Soviet Union since 1944. In 1953 he became a Corresponding Member of the U.S.S.R. Academy of Sciences.

The main works of Kruzhilin are devoted to experimentally establishing the distribution of the ratio of heat emission along the surface of a body, the calculation of a terminal heat layer, the theory of heat emission on condensation of steam and a boiling liquid, and the investigation of removal of moisture by steam from boilers.

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KRYLOV, ALEKSANDR PETROVICH (Petroleum Engineer)

A. P. Krylov was born August 14, 1904. He graduated in 1926 from Leningrad Mining Institute. He began teaching at the Moscow Petroleum Institute in 1933 and in 1949 he became professor. In 1953 he was made deputy Director of the All Union Scientific Research Petroleum Institute and Chief of a laboratory at the Institute of Petroleum at the U.S.S.R. Academy of Sciences. Since 1953 he has been a Corresponding Member of the U.S.S.R. Academy of Sciences. He was awarded a Stalin Prize in 1949.

Krylov's main works deal with rational methods in exploiting oil deposits.

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V. S. Kulebakin was born October 18, 1891. In 1914 he graduated from the Moscow Higher Technical School where in 1917 he began teaching. He also taught in other higher educational institutions and in 1921 became a professor. In 1923 he was appointed professor at the Air Force Engineering Academy. Kulebakin organized the All-Union Electrotechnical Institute, the Moscow Energy Institute, and the Institute of Automatics and Telemechanics of the U.S.S.R. Academy of Sciences. He had been a Corresponding Member of the U.S.S.R. Academy of Sciences since 1933, and in 1939 he was elected Academician. He is a Major General in the Engineer-Technical Service. In 1950 he was awarded a Stalin Prize.

Kulebakin has worked on electronic computers, automatic regulation and design of regulators. He has studied the electrical ignition of aircraft engines. Investigations of Kulebakin on the reflection of light from the earth's surface and from rotating propellers, and on illumination of open spaces for making night flying practical. Kulebakin has also worked on the automation of electrical drive. His accomplishment in the electrification of airplanes was the basis of electrical engineering in Soviet aviation. He participated in the development of electric locomotion in mines (Stalin Prize, 1950).

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KUPREVICH, VASILII FEOFILOVICH (Botanist)

V. F. Kuprevich was born January 24, 1897. From 1934 to 1938, he worked in the Biological Institute of the Byelorussian S.S.R. Academy of Sciences. In 1938, he was made chief of a laboratory of the Botanical Institute of the U.S.S.R. Academy of Sciences, and from 1949 to 1952, he was Director of this Institute. In 1952 V. F. Kuprevich was elected an Academician of the Byelorussian S.S.R. Academy and President of the Academy of Sciences of Byelorussian S.S.R. Since 1953 he has been a Corresponding Member of the U.S.S.R. Academy of Sciences. In 1945 V. F. Kuprevich became a member of the Communist Party of the Soviet Union. He is presently a Deputy of the U.S.S.R. Supreme Soviet.

Kuprevich has studied the physiology and biochemistry of diseased plants and the classification of mushrooms. He has investigated the physiology of diseased plants. He was the first to discover the presence of extracellular enzymes in obligate parasites and proposed progressive curtailment and specialization of extracellular enzymatic apparatus in parasitic mushrooms in the process of their evolution. The basis of the pathological process is the action of extracellular enzymes of a parasite on the protoplast of the host and responsive reactions of the latter which led to necrosis, or the suppression of the activity of the parasitic enzymes. Kuprevich showed that leaves can assimilate carbon dioxide transmitted along with water from other parts of the plant. These investigations led to the discovery of the feeding process of plants by carbon dioxide from the soil. Kuprevich discovered extracellular enzymes which are secreted by the thinnest roots of higher plants. He proved the possibility of heterotrophous feeding of higher plants in natural environments and eliminated the principal

difference in the method of feeding of autotrophic and heterotrophic plants.

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Biography:

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KURDYUMOV, GEORGII VYACHESLAVOVICH (Metallurgist)

G. V. Kurdyumov was born February 1, 1902. In 1926 he graduated from the Leningrad Polytechnic Institute. He had been working since 1925 at the Physico-Technical Institute of the U.S.S.R. Academy of Sciences. In 1932 he began working at the Dnepropetrovsk Physico-Technical Institute, and from 1932 to 1941 he taught at Dnepropetrovsk University. Kurdyumov was appointed Director of the Institute of Metalworking and the Physics of Metals of the Central Scientific Institute of Ferrous Metallurgy (Moscow) in 1944. In 1939 he was elected Academician of the Ukrainian S.S.R. Academy of Sciences. He has been a Corresponding Member of the U.S.S.R. Academy of Sciences since 1946 and since 1953 an Academician. He was awarded, in 1949, a Stalin Prize.

Kurdyumov has studied the processes arising in the hardening and tempering of steel and the phenomena of phase transformations, hardening, and diffusion in metals and alloys. Together with N. Y. Gudtsov and N. Ya. Selyakov, he defined (1926) the crystalline structure of martensite. The existence of the regular orientation of the crystalline lattice of martensite

in relation to austenite was revealed by Kurdymov together with A. A. Ivens and G. Zaks (1929-30). He further established that the normal mutual orientation of crystal lattices of the initial and resulting phases occurs according to a general pattern of phase transformations in solids. In 1932-39, Kurdymov made studies of metastable states and phase transformations in copper alloys. The theory of these transformations permitted Kurdymov to discover in 1948 the isothermic transformation of martensite at low temperatures and the thermoelastic equilibrium in martensite transformation.

In February 1962, Kurdymov visited the United States to attend the Aluminum Symposium and annual meeting of the American Institute of Mining, Metallurgical, and Petroleum Engineers. (University of Illinois at Urbana and AIME, New York).

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KURSANOV, ANDREI L'VOVICH (Biochemist)

A. L. Kursanov, son of L. I. Kursanov, was born November 8, 1902. He graduated in 1926 from Moscow University. First he worked at the Scientific Research Institute. From 1929 to 1938 he taught at the Moscow K. A. Timiryazev Agricultural Academy. Beginning in 1935 he was also at the A. N. Bakh Institute of Biochemistry. He started teaching at Moscow University in 1944. In 1952 Kursanov was made Director of the Timiryazev Institute of Plant Physiology of the U.S.S.R. Academy of Sciences. He was elected in 1946, a Corresponding Member of the U.S.S.R. Academy of Sciences and in 1953, an Academician.

Kursanov's investigations are in plant metabolism. He ascertained the dependence between assimilation of carbon dioxide and emission of high polymer substances from leaves, studied the action of enzymes in a living plant, and investigated the process of assimilation of carbon dioxide by soils through a root system. From 1940 Kursanov conducted investigation of tanning substances of the tea leaf, important in control of tea production.

Kursanov is currently Chairman of the Scientific Council of Exhibitions.

As of 1961, Kursanov was a Member of the Presidium of the U.S.S.R. Academy of Sciences.

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KURSANOV, DMITRII NIKOLAEVICH (Organic Chemist)

D. N. Kursanov was born April 3, 1899. He graduated in 1924 from Moscow University. From 1930 to 1947 he worked at the Moscow Textile Institute and in 1936 was made professor. Beginning in 1943, he has worked at the Institute of Organic Chemistry and in 1953 at the Institute of Scientific Information of the U.S.S.R. Academy of Sciences. In 1953 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences.

The main emphasis of Kursanov's work lies in studying reaction mechanisms of organic substances, and in particular, alcohol-dehydration, the reactions catalyzed by aluminum chloride, and the splitting and exchange of quaternary ammonium compounds. He discovered a number of new reactions of practical importance, in the formation of hydrophobic derivatives of cellulose and reactions in chemical dyeing of cellulose. Kursanov has also investigated with isotopes the intramolecular mutual influence of atoms in organic compounds.

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KUZIN, ALEKSANDR MIKHAILOVICH (Radiobiologist)

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Kuzin visited the United States in January 1958 to participate in the UN session on Atomic Radiation in New York City. He has also attended Pugwash Conferences.

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1925-1931, he was a postgraduate student and assistant at Moscow State University. He was chief of the Microbiological Laboratory of a limnological station from 1931 to 1941. In 1941-46, he was a senior scientific worker at the Lublin plant for the decontamination of sewer water. In 1942 he worked at the U.S.S.R. Academy of Sciences Institute of Microbiology where in 1946 he became section chief. He was elected, in 1960, a Corresponding Member of the U.S.S.R. Academy of Sciences.

Kuznetsov's works are concerned with the geological activity and physiology of microbes.

Kuznetsov has also been a member of the Institute of Biology of Reservoirs, Verkhnye-Nikolskoye, Academy of Sciences as well as a member of the U.S.S.R. Academy of Sciences Institute of Microbiology.

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KUZNETSOV, VALERII ALEKSEEVICH (Geologist)

V. A. Kuznetsov was born April 12, 1906. After graduating from the Tomsk Geological Survey Institute in 1932, he worked in geological establishments of Siberia. Since 1945, he has worked at the Mining and Geological Institute of the Siberian branch of the U.S.S.R. Academy of Sciences. Since 1958 he has been a Corresponding Member of the U.S.S.R. Academy of Sciences. The Presidium of the U.S.S.R. Academy of Sciences, in 1946 and in 1953, awarded Kuznetsov several prizes including the V. A. Obruchev Prize.

Kuznetsov's main works deal with mercury deposits, metallogenesis of mercury, and also the distribution of mercury in West Siberia. He is also concerned with tectonics and magmatism of the Altai Mountains, Tuva, and Altai-Sayansk folded territory in general.

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KUZNETSOV, VLADIMIR DMITRIEVICH (Physicist)

V. D. Kuznetsov was born April 30, 1887. In 1910 he graduated from Petersburg University and in 1911 began working in higher educational institutions of Tomsk. He became a professor at Tomsk University where he had been since 1917. Beginning in 1929, he has directed the Siberian Physico-Technical Institute organized by him. Since 1945 Kuznetsov has been a member of the Communist Party of the Soviet Union. Having been a Corresponding Member of the U.S.S.R. Academy of Sciences since 1946, he became an Academician in 1958. He was made an Honored Scientist of RSFSR in 1945 and Hero of Socialist Labor in 1957, and in 1942 he was awarded a Stalin Prize.

The basic direction of Kuznetsov's work is comprehensive investigation of the properties of solids and the phenomena occurring in solids during their technological treatment. Kuznetsov studied surface energy, hardness, and other properties of crystals; internal friction of solids; plasticity and strength of metallic single crystals and poly-crystals; the mechanism of crystallization and recrystallization; external friction and wear of metals and alloys; and the cutting of metals. He wrote a multi-volume monograph, *The Physics of Solids*. Kuznetsov worked out a basic physical theory of cutting which showed both theoretically and experimentally the possibility of rapid cutting of metals. This was later confirmed in practice.

As of 1961, Kuznetsov was a Member of the Presidium of the Siberian Branch U.S.S.R. Academy of Sciences.

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Biography:

Studies in the Physics of Solids, Collection of Articles.
Dedicated to the 70th Birthday of Corresponding Member
V. D. Kuznetsov of the Academy of Sciences U.S.S.R.
Moscow, 1957.

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KUZNETSOV, V. I. (Mechanical Engineer)

V. I. Kuznetsov was born April 27, 1913. After graduating in 1938 from Leningrad Polytechnic Institute, he worked in scientific research and construction organizations. Since 1942 he has been a member of the Communist Party of the Soviet Union. He was elected, in 1958, a Corresponding Member of the U.S.S.R. Academy of Sciences. In 1923 and in 1946 he received Stalin Prizes.

His main works are devoted to various questions of applied mechanics.

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KUZNETSOV, YURII ALEKSEEVICH (Geologist)

Yu. A. Kuznetsov was born April 19, 1903. He graduated in 1924 from Tomsk University. In 1930 he began working at the Tomsk Polytechnic Institute (in 1930-1933 this Institute was the Geological Survey Institute, and in 1933-1938, the Industrial Institute). He was made professor in 1938 at the Tomsk Polytechnic Institute. He has also participated in the work of geological survey organizations of Siberia. Since 1958 he has been a Corresponding Member of the U.S.S.R. Academy of Sciences.

Kuznetsov's works deal with stratigraphy, tectonics, petrology and metallogenesis of the Altai, Kuznets-Alatau, Upper Sayan and the Yenisei ridge. He paid particular attention to elucidating conditions in the formation of intrusions and their role in ore mineralization. He studied deposits of iron ore, rare and non-ferrous metals, gold, and refractory clay. He studied magmatic rock facies and also magmatic formations. He systematized and elucidated the characteristics of tectonic structures.

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Origin of magmatic rocks. Magmatism and Minerals Associated with it. Moscow: 1955.
Facies of magmatic rocks. Questions on the Geology of Asia, 2. Moscow: 1955

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LANDAU, LEV DAVIDOVICH (Physicist)

L. D. Landau was born January 22, 1908 in Baku. In 1927 he graduated from Leningrad State University. He began working in 1937 at the Institute of Physical Problems of the U.S.S.R. Academy of Sciences. In 1943 he became a professor at Moscow State University. He has been an Academician since 1946. He was awarded a State Prize in 1946, Lenin Prize in 1962, and two Orders of Lenin. In November 1962 Landau was awarded the Nobel Prize in physics. He is a member of numerous foreign scientific organizations including: the National Academy of Sciences of the United States, the English Physical Society, the English Royal Society, the Danish Royal Academy of Sciences, the Dutch Academy of Sciences, and the French Physical Society.

Landau's investigations are in solid state theory and physics of low temperatures. He has worked out a thermodynamic theory of the phase transitions of a secondary kind in solids bodies, and elucidated their profound connection with the qualitative change of a body's symmetry during transition. In 1940-41 Landau developed the macroscopic theory of liquid helium superfluidity which takes place in this fluid at temperatures close to absolute zero. Landau predicted the possibility of dif-fusing sound waves with two unequal speeds (phenomenon of secondary sound) in liquid helium. In his works on supercon-ductivity, Landau presented a theory on the intermediate con-dition of superconductors. In conjunction with A. Abrikosov, I. Pomeranchuk and I. Khalatnikov, Landau found a solution to the main equations of the quantum field theory, without the use of the perturbation theory, and he proved that the concept of point interaction is groundless because it leads to the absence of any interaction. Recently, in connection with the discovery of the nonconservation of parity in weak interactions, Landau pro-posed the theory of combined inversion and the theory of a "two component neutrino." A considerable number of his investi-gations are in nuclear physics and cosmic rays.

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Biography:

V. B. Berestetskii. Lev Davidovich Landau (To the 50th Anniversary since the date of birth). Uspekhi Fiz. Nauk, 64, #3 (1958).

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LARIONOV, ANDREI NIKOLAEVICH (Electrical Engineer)

A. N. Larionov was born July 16, 1889. He graduated in 1919 from Moscow Technical College and until 1930 taught there. From 1921 to 1941 he also worked at the All Union Electro-Technical Institute. In 1930 he assisted in the organization of the Moscow Institute of Energetics and in 1933 was made a professor there. He began working in 1953 at the Institute of Automation and Telemekhanics of the U.S.S.R. Academy of Sciences. Since 1953 he has been a Corresponding Member of the U.S.S.R. Academy of Sciences.

The major works of Larionov deal with the theory, calculation, and construction of special electric machines and electric drive. Under the leadership and participation of Larionov there were developed a series of electric machines which are distinguished by their light weight and small size (high voltage, direct current machines, high voltage direct-current

convertors, machines with excitation by permanent magnets, alternating current generators, special machines). In 1924 he proposed a three-phase bridge scheme of current rectification. He took part in the planning of electrical equipment in the airplane "Maxim Gorki", in the solution of technical problems associated with the starting of turbo and hydro generators in power plants, and in the solution of the electrification of oil fields.

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Professor A. N. Larionov (On the 60th Anniversary since the date of birth and 30th Anniversary of his scientific-pedagogical activity. Electricity, 1950, #1.

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LAVRENKO, EVGENII MIKHAILOVICH (Geobotanist)

E. M. Lavrenko was born February 24, 1900. In 1921-1928, he worked at the Botanical Gardens in Khar'kov. He was assistant professor in 1929, and in 1931-1934 professor at Khar'kov Agricultural Institute. In 1934 he started working at the Botanical Institute of the U.S.S.R. Academy of Sciences. Since 1946 he has been a Corresponding Member of the U.S.S.R. Academy of Sciences.

Lavrenko developed a new classification for steppe vegetation of the U.S.S.R. and proposed the zonal and provincial

division of vegetation of European-Asiatic Steppe Regions. He investigated zoning and compiled vegetation maps. His work on the history of flora and vegetation threw light on the origin of vegetative cover of the U.S.S.R. He introduced the concept of phytogeosphere as a part of the biosphere.

Bibliography:

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LAVRENTEV, MIKHAIL ALEKSEEVICH (Mathematician)

M. A. Lavrentev was born November 19, 1900 in Kazan. In 1922 he graduated from Moscow University. He received the Doctor of Physical-Mathematical Sciences degree in 1933 and the Doctor of Technical Sciences degree in 1932. From 1931 to 1941, he was professor at Moscow University. He was made Chairman in 1934 of the Department on Theory of Functions at the Mathematical Institute of the U.S.S.R. Academy of Sciences. From 1939 to 1948 he was Director of the Institute of Mathematics and Mechanics of the Ukrainian S.S.R. Academy of Sciences, and from 1945 to 1948 he was Vice President of this Academy. Lavrentev was Director of the Institute of Exact Mechanics and Computing Techniques of the U.S.S.R. Academy of Sciences from 1950 to 1953. He was, in 1951-53 and in 1955-57, Academician Secretary of the Department of Physico-Mathematical Sciences of the U.S.S.R. Academy of Sciences. In 1957 he became Vice President of the U.S.S.R. Academy of Sciences and Chairman of the Siberian branch of the U.S.S.R. Academy of Sciences. He was elected Academician of the

Ukrainian S.S.R. Academy of Sciences in 1939, and in 1946 Academician of the U.S.S.R. Academy of Sciences. Lavrentev has been a member of the Communist Party of the Soviet Union since 1952. In 1957 he became a member of the Czechoslovakian Academy of Sciences. He was a deputy to the U.S.S.R. Supreme Soviet (5th Convocation). Lavrentev was elected again a deputy from RSFSR to the Supreme Soviet in March 1962. In 1946 and 1949, he was awarded Stalin Prizes, and in 1960 received the Order of Lenin.

Lavrentev has been interested in the theory of the function of a complex variable, the metric study of the conformity of the boundaries at conformal mapping, and the properties of functions that can be represented by converging series of polynomials. He worked out the theory of quasi-conformal mapping, which is the basis of geometric methods of solving a wide range of problems in mathematics and mathematical physics. Lavrentev did a great deal of work on problems of the mechanics of a continuous medium and on hydrodynamics such as the theory of flows and a new theory of non-linear waves.

As of 1961, Lavrentev was Director of the Institute of Hydrodynamics of the Siberian Branch U.S.S.R. Academy of Sciences and, in the same year, he was elected to the Central Committee of the Communist Party.

Bibliography:

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Biography:

M. V. Keldysh. On the 50th birthday of M. A. Lavrentev. Izvest. Akad. Nauk S.S.S.R., Ser. Mat., 1951, 15, 1.

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LAVROVSKII, KONSTANTIN PETROVICH (Organic Chemist)

K. P. Lavrovskii was born December 31, 1898. He graduated in 1926 from Moscow University. In 1930-34 he worked at the State Scientific Research Oil Institute and in 1933 became a professor there. He also worked for a number of years in the oil industry. Beginning in 1942 he was at the U.S.S.R. Academy of Sciences, first at the Institute of Mineral Fields, then at the Institute of Oil. Since 1953 he has been a Corresponding Member of the U.S.S.R. Academy of Sciences. He has been a member of the Communist Party of the Soviet Union from 1920. He was awarded M. V. Frunze and N. D. Zelinskii Prizes.

Lavrovskii's investigations are concerned with the field of chemistry and technology of oil refining and organic catalysis. His work on the synthesis of tetraethyl lead was the basis for the Soviet production of this antiknock agent. He developed the commercial production of aviation gasoline from sulfur crude of "Second Baku." His studies of catalytic hydrocarbon transformations was a theoretical basis for the production of unsaturated gases and high octane fuels.

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and A. L. Rozenthal' and A. Kh. Eglit. Interaction of iron ores with methane in conditions of a 'boiling' layer. Doklady Akad. Nauk S.S.S.R., 1957, 112, #4.

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LEBEDEV, ALEKSANDR ALEKSEEVICH (Physicist)

A. A. Lebedev was born November 26, 1893. In 1916 he graduated from Petersburg University and remained there to prepare for a professorship. Except for a few years, he has

been working at Leningrad University until the present time. He was a Corresponding Member of the U.S.S.R. Academy of Sciences from 1939 to 1943 when he was elected an Academician. Lebedev was twice a Deputy to the U.S.S.R. Supreme Soviet. He received a Stalin Prize in 1947 and again in 1949. In 1957 he was made a Hero of Socialist Labor.

In 1919, at the State Optical Institute, Lebedev began a varied study of the processes of annealing optical glass. He formulated a theory of temperature conditions for annealing various types of glass. Lebedev investigated the use of interference for measuring wave lengths and indices of refraction. In 1931 he designed a polarized interferometer which was based on light passing through a birefringent lens. He is a prominent Soviet specialist in the area of electronic optics. In 1931, while studying the diffraction of fast electrons, Lebedev used the focusing action of a magnetic lens in an electron diffraction camera. Together with associates, Lebedev designed a Soviet electronic microscope (Stalin Prize 1947). He has also studied photoelectric phenomena, and he directed the construction of a Soviet photographic camera (Stalin Prize 1949).

In 1958 Lebedev was appointed Chief of the U.S.S.R. Academy of Sciences Commission Staff on Radiobiology. As of 1961, he was Chairman of the Permanent Commission for Electron Microscopy.

Bibliography:

On structural transformations in glass, in Structure of Glass. Collection of Articles. Moscow-Leningrad: 1953.

Biography:

Academician A. A. Lebedev, in General Conference of the U.S.S.R. Academy of Sciences, September 25-30, 1943.

Moscow-Leningrad: 1944.

Academician Aleksandr Alekseevich Lebedev (On the 60th Anniversary since the date of birth). Zhur. Eksptl. i Teoret. Fiz., 1953, 25, #6(12).

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LEBEDEV, SERGEI ALEKSEEVICH (Radio Engineer)

S. A. Lebedev was born November 2, 1902. After graduating in 1928 from Moscow Technological College, he worked until 1945 in the All-Union Electrotechnical Institute. In 1946 to 1951 he was Director of the Institute of Electroengineering at the Ukrainian S.S.R. Academy of Sciences. Lebedev became

Director, in 1953, of the Institute of Exact Mechanics and Computing Technicians of the U.S.S.R. Academy of Sciences. Also in 1953 he was made professor at the Moscow Physico-Technical Institute. He has been a member of the Communist Party of the Soviet Union since 1946. In 1945 he was elected Academician of the Ukrainian S.S.R. Academy of Sciences and in 1953 an Academician of the U.S.S.R. Academy of Sciences. He was awarded a Stalin Prize in 1950 and in 1956 he was a Hero of Socialist Labor.

Lebedev was one of the first in the U.S.S.R. to work on the stability of power systems. He is the author of a theory on the stability of synchronous machines, and a specialist in automation of power systems. He has been working on computer techniques and the design and construction of computer devices. He directed the construction of high speed computers.

In December 1958 and April 1959, Lebedev visited the United States to attend the Joint Computer Conference in Philadelphia.

In November 1962 Lebedev was awarded the Order of Lenin.

Bibliography:

and P. S. Zhdanov. Stability of Parallel Action of Electrical Systems, 2nd ed. Moscow-Leningrad: 1934.

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Biography:

Lebedev, Sergei Alekseevich. *Vestnik Akad. Nauk S.S.S.R.*, 1954, #1, 42.

A. D. Nesterenko and I. T. Shvets. Sergei Alekseevich Lebedev. Questions of Electro-automation and Radio Technics. Kiev: 1954.

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LEONTOVICH, MIKHAIL ALEKSANDROVICH (Physicist)

M. A. Leontovich was born March 9, 1903, son of A. V. Leontovich (1869-1943, physiologist). In 1923 he graduated from Moscow University. He worked on the Commission for

Investigation of the Kursk Magnetic Anomaly. Beginning in 1929, he was a scientific worker at the Physics Institute of Moscow University. He was a professor from 1934 to 1935 and again in 1955 at Moscow University. From 1934 to 1941 and 1946 to 1952, he worked at the Physics Institute of the U.S.S.R. Academy of Sciences. Leontovich began working at the Institute of Atomic Energy, U.S.S.R. Academy of Sciences in 1951. In 1939 he was elected Corresponding Member of the U.S.S.R. Academy of Sciences and in 1946 Academician. He received the Gold Medal of A. S. Popov in 1952, and in 1958 a Lenin Prize.

Leontovich's investigations are in electrodynamics, optics, statistical physics, radiophysics. Important investigations by Leontovich are on the theory of molecular dispersion of light (until 1935), in ultra-acoustics [absorption of sound in gases (1936), in liquids (1936 and 1939)], on the theory of fluctuations and statistical physics [on the basis of thermodynamic statistics (1932), on gas-kinetic equations derived from the theory on stochastic processes (1935)], and in various aspects of radiophysics [thermal fluctuations of the electromagnetic field in solids (together with S. M. Rytov)]. Leontovich also studied the theory of radiowave propagation and the theory of antennae. He determined the approximate ratios between the components of the electromagnetic field on the surface of a conducting medium, thus considerably simplifying mathematical treatment of the problem of radiowave propagation along the earth's surface and allowing solution of many special problems. A theory of fine wire antennae was completed by Leontovich jointly with his student, M. L. Levin, and published as "On the Theory of Excitation of Oscillations in Antennae Vibrators" (1944). Leontovich participated in solving practical problems in radioengineering. For his work in radiophysics and radioengineering Leontovich was awarded the Gold Medal of A. S. Popov (1952). Recently he has been investigating powerful pulse discharges in gas in an effort to obtain high-temperature plasma (Lenin Prize 1958).

Bibliography:

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Biography:

Mikhail Aleksandrovich Leontovich. On the 50th Anniversary since the date of birth. Zhur. Eksptl. i Teoret. Fiz., 1953, 24, #1(7).

S. Khaikin. Laureate of the Gold Medal of Popov. Radio, 1952, #6.

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LEVICH, VENIAMIN GRIGOR'EVICH (Physical Chemist and Theoretical Physicist)

V. G. Levich was born March 30, 1917. He graduated in 1937 from Kharkov University. In 1940-1958 he worked at the Institute of Physical Chemistry at the U.S.S.R. Academy of Sciences. He taught in 1940-1949 at Moscow State Pedagogical Institute. He was made Departmental Chairman of the Moscow Engineering-Physical Institute in 1950, and in 1951 professor. In 1958, Levich became Chairman of the Theoretical Department of the Institute of Electrochemistry of the U.S.S.R. Academy of Sciences. Since 1958 he has been a Corresponding Member of the U.S.S.R. Academy of Sciences.

The works of Levich deal with the investigation of physico-chemical processes and are mainly concerned with problems of physico-chemical hydrodynamics. He formulated a theory of mass transfer to the phase contacting area, a theory of concentrated polarization with the passing of a current through solutions, a theory of the influence of surface-active substances on the movement of a liquid, a theory of a non-equilibrium double layer, coagulation of aerosols and colloids in turbulent flows, and other questions on the theory of mutual influence of physico-chemical processes and the movement of a medium.

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LIFSHITS, IL'YA MIKHAILOVICH (Physicist)

I. M. Lifshits was born in 1917. In 1936 he graduated from the Khar'kov State University, and in 1938 from the Khar'kov Mechanico-Machine-Building Institute. He started, in 1937, as a scientific worker, and in 1941, became a section chief at the Ukraine S.S.R. Academy of Sciences Physico-Technical Institute in Khar'kov. Also in 1941 he received his Doctor of Science Degree. In 1944 he became Chairman of the Theoretical Physics Department of Khar'kov State University. He is a Corresponding Member of the Ukrainian SSR Academy of Sciences and was elected, in 1960, a Corresponding Member of the U.S.S.R. Academy of Sciences. In 1952 Lifshits was awarded the Mandelshtam Memorial Prize of the U.S.S.R. Academy of Sciences for work on dynamic theory of nonideal crystals. For his research on electronic structure of metals, he received, in 1961, the Simon Memorial Prize of the Physical Society of London.

Lifshits' works deal with the theory of solid state physics and low temperature physics.

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On the theory of X-rays scattering by crystals with variable structure. *Sov. Phys.* 12, (1937).

Optical behavior of non-ideal crystal lattices in infra-red. *Zhur. Eksper. i Teor. Fiz.* 12, 117 (1942). (English trans. *Jour. of Phys.* 7, 215, 1943). *Zhur. Eksper. i Teor. Fiz.* 12, 137 (1942). (English trans. *Jour. of Phys.* 7, 86, 1943).

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LINNIK, VLADIMIR PAVLOVICH (Physicist)

V. P. Linnik was born July 6, 1889. In 1914 he graduated from Kiev University. He began working at the State Optical Institute in 1926. Until 1941 he was a professor at Leningrad University. Since 1939 he has been an Academician of the U.S.S.R. Academy of Sciences. Twice, in 1946 and in 1950, he was awarded Stalin Prizes.

Linnik's research is in optics and its application in the instrument-making industry. He constructed the following optical devices: a double microscope (1929), microinterferometer (1933) for controlling the exactness of the processing of surfaces, a microscope for studying the surface of red-hot bodies, interferometers for measuring double stars and the angular diameter of the sun. He has developed methods of laboratory investigation and testing of optical devices such as the aberration of optical systems, the centering of optical systems, and the assembling of microscope lenses. He designed control devices for optical-mechanical industry. Linnik also worked on the physics of X-rays and, in particular, on the investigation of crystals with X-rays.

Bibliography:

Device for interference investigation of the reflecting objects under the microscope ("Microinterferometer"). Doklady Akad. Nauk S.S.S.R., 1933, #1.

Device for interference investigation of the microprofile of a surface ("Microprofilometer"). Doklady Akad. Nauk S.S.S.R., 1945, 47, #9.

Interferometer for controlling large machine details. Doklady Akad. Nauk S.S.S.R., 1942, 35, #1.

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Biography:

V. P. Linnik. *Uspekhi Fiz. Nauk*, 1939, 21, #2.

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LINNIK, YURII VLADIMIROVICH (Mathematician)

Yu. V. Linnik was born January 8, 1915. He graduated from Leningrad University in 1938 and did postgraduate work there in 1940, in which year he was granted the Doctor of Physical-Mathematical Sciences degree. Since 1940, he has been employed at the Leningrad branch of the U.S.S.R. Academy of Sciences Mathematics Institute, and has been a professor at Leningrad University since 1944. In 1947 he was awarded a Stalin Prize. He was elected, in 1953, a Corresponding Member of the U.S.S.R. Academy of Sciences.

In the theory of numbers, Linnik was occupied with the presentation of numbers in quadratic form and gave an estimation of the smallest prime number in an arithmetical progression with a large difference. He also worked in the calculus of probability, on heterogeneous Markov chains and on mathematical statistics.

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Asymptotic distribution of whole points on a sphere. *Doklady Akad. Nauk S.S.S.R.*, 1954, 96, #5.

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LIVANOV, MIKHAIL NIKOLAEVICH (Human and Animal
Physiologist)

As of 1962, M. N. Livanov has been working at the Institute of Biophysics, Moscow, Academy of Medical Sciences and at the Institute of Higher Nervous Activity, Moscow, Academy of Sciences U.S.S.R. He was elected a Corresponding Member of the U.S.S.R. Academy of Sciences, June 1962.

LURIE (LUR'YE), ANATOLII ISAKOVICH (Mechanics Specialist)

A. I. Lurie was born in 1901. Upon graduating from the Leningrad Polytechnical Institute (Faculty of Physics and Mechanics) in 1925, he began working there. In 1935, he became a professor, and chairman of the Department of Theoretical Mechanics and later (1944) of Machine Strength and Dynamics. He was elected, in 1960, a Corresponding Member of the U.S.S.R. Academy of Sciences.

Lurie's basic work deals with the theory of tensile strength, stability of automatic control systems and analytical mechanics. *Bibliography:*

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LYSENKO, TROFIM DENISOVICH (Biologist and Agriculturist)

T. D. Lysenko was born September 17, 1898. He graduated from Uman School of Horticulture in 1921 and in 1925 from Kiev Institute of Agriculture. He worked on an experimental selection station in Gandzha (now Kirovobad), Azerbaidzhan S.S.R. then at the All-Union Genetic Institute in Odessa. From 1938 to 1956 he was President of the Lenin All-Union Academy of Agricultural Sciences, and was elected a Member of the Presidium in 1960. In 1940 Lysenko was made Director of the Genetics Institute of the U.S.S.R. Academy of Sciences. He has been an Academician of the Ukrainian S.S.R. Academy of Sciences since 1934 and of the U.S.S.R. Academy of Sciences since 1939. In 1935 he became an Active Member of the Lenin All-Union Academy of Agricultural Sciences. Lysenko was Deputy to the Supreme Soviet of the U.S.S.R., first through fifth convocations. In March 1962, he was again elected deputy from the Ukrainian SSR to the Supreme Soviet. In 1941, 1943, and 1949 he was awarded Stalin Prizes and in 1945 he was a Hero of Socialist Labor.

Lysenko works are in the following fields: heredity and its variability, individual development of organisms, intra- and inter-species relationships, plant nutrition. Lysenko enunciated a theory on stagewise development of plants. He proposed a method of seed treatment (vernalization) before sowing and of cotton stamping. He developed a number of new grains (vernalized wheat "lyutestsens 1173," "odesskaya 13," barley "odesskii 14," cotton "odesskii 1." Based on a hypothesis of the connection between an organism and the surrounding medium he attempted to develop methods of direct changes of organic nature in agricultural plants. He attempted to convert vernalized non-wintering farm crops into cold-resistant winter crops. He proposed a method of soil fertilization by organic-mineral mixtures. While working on questions of vegetative and sexual hybridization Lysenko formed a number of theories on heredity and its variability. In addition to finding rules for individual development of plants, Lysenko also studied the laws of species' formation and intra- and interspecies relationships. After studying relationships among individual organisms within a

species, Lysenko proposed a theory that in nature there is no overpopulation within the species and the struggle for survival is absent. He also postulated that the existing biological species can directly produce other species under the influence of the surrounding medium changes. These ideas are not shared by many Soviet scientists.

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Biography:

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A. Molodchikov. Reformers of Nature (I. V. Michurin, T. D. Lysenko, L. Burbank). Moscow: 1948.

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LYUL'KA, ARKHIP MIKHAILOVICH (Aeronautical Engineer)

A. M. Lyul'ka was born March 24, 1908. After graduating in 1931 from the Kiev Polytechnic Institute, he worked at the Kharkov Turbo-Generator Plant. In 1933-1939 he worked at the Kharkov Aviation Institute. Lyul'ka worked at the Central Boiler-Turbine Institute in Leningrad in 1939-1941, and subsequently in other scientific research and designers' organizations. In 1958 he received his Doctor of Technical Sciences degree. He is a professor. Since 1947 he has been a member of the Communist Party of the Soviet Union. In 1948 and 1951, he was awarded Stalin Prizes and in 1957 Hero of Socialist Labor. He was elected, in 1960, a Corresponding Member of the U.S.S.R. Academy of Sciences.

While at the Kharkov Aviation Institute, Lyul'ka began working on the problem of utilizing a gas turbine as an aviation engine. In this period he worked out a theory and method of constructing high altitude and high-performance characteristics

for a turbo-compression air fed engine and the expediency of using this engine as a power plant for a high-performance jet plane. In 1937-39 Lyul'ka designed the first Soviet experimental turbo-compression jet aviation engine. In postwar years, powerful, contemporary turbojet engines AL-3, AL-5 were built under the leadership of Lyul'ka. He has been working on a series of basic engineering problems such as the analytic dependence of the degeneration of a turbojet engine on the speed of flight as in its transfer into a ramjet.

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LYUSTERNIK, LAZAR ARONOVICH (Mathematician)

L. A. Lyusternik was born December 31, 1899 in Zdunska Wola, Poland. He graduated from Moscow University in 1922 and received the degree of Doctor of Physical-Mathematics in 1935. In 1931, he became a professor at Moscow University. He was awarded a Stalin Prize in 1946, and was made a Corresponding Member of the U.S.S.R. Academy of Sciences in 1946.

Lyusternik utilized topological methods for calculus of variations "in the whole." In 1924, he applied the method of finite differences to the solution on the problem of Dirichlet. He proved, together with L. G. Shnirelman, the theorem of three geodesics. He also works in the area of functional analysis, differential equations, and computing mathematics.

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Biography:

Thirty Years of Mathematics in the U.S.S.R. 1917-1947.

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MAKAREVSKII, ALEKSANDR IVANOVICH (Aeronautical Engineer)

A. I. Makarevskii was born April 6, 1904. He graduated in 1929 from Moscow Technical School. In 1927 he began working at the Central Aero-Hydrodynamic Institute and in 1950 became Director of this Institute. In 1952 he was made professor at the Moscow Physico-Technical Institute. He has been a member of the Communist Party of the Soviet Union since 1943. In 1953 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences. He was the recipient in 1943 of a Stalin Prize.

Makarevskii has investigated the external loads acting upon aircraft in flight. He presented an analysis of possible overloads in the aircraft in connection with characteristics of the stability and maneuverability of the aircraft. In his paper, "Questions on Durability of an Aircraft at High Speeds" (1947) he examined the influence of the compressibility of air on the magnitude of aerodynamic loads. The most important result of the works of Makarevskii was the establishment of domestic standards on durability, including that of high speed aircraft. He took part in compiling a work "Manual for Constructors" (1940-42).

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Works of the Central Aero-Hydrodynamic Institute, 1940, #41.

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MAKSUTOV, DMITRII DMITRIEVICH (Astronomical Equipment Designer)

D. D. Maksutov was born April 23, 1896. He graduated from the Military Engineering School in 1914. In 1930 he organized and directed the Laboratory of Astronomical Optics at the State Optical Institute in Leningrad. In 1941 he became a doctor and in 1944, a professor. He began working in 1952 at the Main Astronomical Observatory of the U.S.S.R. Academy of Sciences (Pulkova). In 1946 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences. He received State Prizes in 1941 and 1946.

Maksutov investigated the improvement of shadowing and other optical methods, the technology of producing large, exact

optical devices, and the theory and practice of producing aspherical surfaces. He invented the catadioptric (meniscus) systems for optical devices, which bear his name. These systems received wide use in a number of fields in science and technology. Maksutov also created optical systems for a number of large unique instruments.

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Leningrad-Moscow: 1948.

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MAL'TSEV, ANATOLII IVANOVICH (Mathematician)

A. I. Mal'tsev was born November 14, 1909. In 1931 he graduated from Moscow University. He was on the staff of the Pedagogical Institute Imeni Ivanovo from 1932 and in 1943 became professor. In 1942 he started working at the Mathematics Institute of the U.S.S.R. Academy of Sciences. Mal'tsev was elected a Corresponding Member of the U.S.S.R. Academy of Sciences in 1953, and in 1958 an Academician. He was a Deputy of the Supreme Soviet U.S.S.R. (fourth and fifth convocations). In 1946 he received a Stalin Prize, and in 1956 he was an Honored Scientist of the R.S.F.S.R.

Mal'tsev is a specialist in algebra, related questions of mathematics logic, and theories of continuous groups. He has published results in the theory of abstract groups, rings, and general algebraic systems.

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Biography:

Mathematics in the U.S.S.R. During 30 Years, 1917-1947.

Collection of Articles, Moscow-Leningrad: 1948 (contains bibliography of the works of Mal'tsev).

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MAN' KOVSKII, GRIGORII IL'ICH (Mining Engineer)

G. I. Man'kovskii was born in 1897. Upon completion of his studies at the Leningrad Mining Institute in 1924, he worked until 1932 as chief of mine construction in the Donets and Lower Moscow basins. During 1932-39, he participated in the building of the Moscow subway. From 1939 to 1954, he again worked in mine construction for the coal industry. In 1954 he took a position at the U.S.S.R. Academy of Sciences Skochinskii Mining Institute. He received a Stalin Prize in 1946, and in 1948 was awarded the title of Honored Scientist and Technologist of the R.S.F.S.R. In 1944 he became a Doctor of Technical Sciences and in 1957, a professor. He was elected, in 1960, a Corresponding Member of the U.S.S.R. Academy of Sciences.

Bibliography:

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MARCHUK, GURII IVANOVICH (Atomic Energy Specialist)

G. I. Marchuk has been a member of the U.S.S.R. Council of Ministers' Main Administration for the Use of Atomic Energy as of 1961. In June 1962 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences.

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MARKOV, ANDREI ANDREEVICH (Mathematician)

A. A. Markov was born September 22, 1903. He is the son of A. A. Markov (1856-1922, the Russian mathematician usually referred to as A. A. Markov Sr.). He has been a professor at Leningrad University since 1935. In 1953, he was elected to the U.S.S.R. Academy of Sciences as a Corresponding Member.

Markov has worked in topology, topological algebra, theory of algorithms, and theory of dynamic systems. He proved by methods of mathematical logic the impossibility of algorithmic solution of some problems in the theory of associative systems and problems which are concerned with whole number matrices.

Biography:

Yu. V. Linnik and N. A. Shanin. Andrei Andreevich Markov (50th Anniversary since the date of birth). *Uspeki Mat. Nauk*, 1954, 9, #1.

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MARKOV, MOISEI ALEKSANDROVICH (Theoretical Physicist)

M. A. Markov was born May 13, 1908. He graduated in 1930 from Moscow University. In 1934 he went to work at the Physics Institute of the U.S.S.R. Academy of Sciences. Since 1953 he has been a Corresponding Member of the U.S.S.R. Academy of Sciences. Markov has also been a member of the Joint Institute of Nuclear Research, Dubna.

The major work of Markov is concerned with the relativity theory of elementary particles and quantum electrodynamics.

He proposed the theory of the so-called non-local fields and established the necessary conditions which had to be satisfied by the theory of extended particles. Other investigations of Markov deal with the study of particles and antiparticles, interaction of hard gamma-quanta with matter, and the systematics of elementary particles.

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MATULIS, YUOZAZ YOUZASOVICH (Chemist)

Yu. Yu. Matulis was born March 31, 1899. He has been an Academician of the Lithuanian S.S.R. Academy of Sciences since 1941 and in 1946 became President. In 1946 he was elected Corresponding Member of the U.S.S.R. Academy of Sciences. He became a member of the Communist Party of the Soviet Union in 1950. In 1945 Matulis was an Honored Scientist of the Lithuanian S.S.R. He has been a Deputy to the U.S.S.R. Supreme Soviet, third through fifth convocations and Chairman of the Lithuanian S.S.R. Society for the Propagation of Political and Scientific Knowledge.

The main investigations of Matulis are concerned with the photochemistry, electrochemistry, and kinetics of reaction in solutions. He is the author of a textbook on colloidal chemistry, and handbook on physical chemistry, and also the author of a number of articles on questions of the influence of surface-active substances on the electrodeposition of metals.

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Text of Practical Physical Chemistry. Kaunas: 1948.

Colloid Chemistry. Kaunas: 1947.

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MEDVEDEV, SERGEI SERGEEVICH (Chemist)

S. S. Medvedev was born May 17, 1891. In 1919 he graduated from Moscow University. He began working at the L. Karpov Physico-Chemical Institute in 1922 and at the same time taught at the Moscow Institute of Fine Chemical Technology. In 1943 he was made an Honored Scientist of the RSFSR. He was elected a Corresponding Member of the U.S.S.R. Academy of Sciences in 1943 and in 1958, an Academician. In 1946 he won a Stalin Prize.

Medvedev has been concerned with polymerization processes, which are the bases of many important chemical industries—synthetic rubber and plastics. He has studied the mechanism of many radical chain reactions and emulsion polymerization. He synthesized new elastic materials with increased heat resistance. In the area of radiation chemistry, Medvedev investigated the influence of nuclear radiation on the processes of polymerization. Recently he has done research on the theory of slow oxidation of hydrocarbons.

In 1961 he received the Order of Lenin and two orders of the Red Banner of Labor.

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MEISEL', MAK SIN NIKOLAEVICH (Microbiologist)

N. N. Meisel' was born in 1901. He graduated from the first Leningrad Medical Institute in 1926, where he completed his postgraduate studies in histology in 1929. In 1932 he completed additional postgraduate work in microbiology and cytology at the U.S.S.R. Academy of Sciences. In the same year he worked as one of the organizers of the Far-Eastern branch of the U.S.S.R. Academy of Sciences, where from 1932 to 1934, he was a member of the Presidium and Academic-Secretary. In 1934 he began work at the U.S.S.R. Academy of Sciences Institute of Microbiology, and in 1959 became Laboratory Chief of the U.S.S.R. Academy of Sciences Institute of Radiation and Physico-Chemical Biology. He undertook a teaching position at the Moscow State University in 1946, and in 1947 received the degree of Doctor of Biological Sciences at that institution. In 1960 he was elected to the U.S.S.R. Academy of Sciences as a Corresponding Member.

Meisel' has worked in microbiology and nucleic acids.

In August 1958, Meisel' visited the United States to attend the International Radiation Research Congress at Buckington, Vermont.

Meisel' is a member of the Institute of Biological Physics of the U.S.S.R. Academy of Sciences, Moscow.

Bibliography:

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Ionizing radiations and cellular metabolism. All-Union Conference on the Application of Isotopes and Radiation, 1957. *Mikrobiologiya* [trans.] 26(4): 502-505. *Biol. Abstr.* 33, 020295 (1959).

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MELENT'EV, LEV ALEKSANDROVICH (Energetics Specialist)

L. A. Melent'ev was born in 1908. In 1930 he graduated from the Leningrad Polytechnical Institute. From 1929-33, he worked at the Leningrad Energetics Institute. He was, 1933-35, bureau chief of the Leningrad Commission on Energetics. From 1936 to 1942, he was a senior instructor, docent, and then professor of the Leningrad Engineering-Economics Institute. In 1942-60, he was a senior scientific worker at the U.S.S.R. Academy of Sciences Institute of Energetics, and from 1945-60, he was also Chairman of the Thermo-Energetics Department, and professor at the Leningrad Engineering Economics Institute. In 1960 he became Director of the U.S.S.R. Academy of Sciences Siberian Branch Institute of Energetics. Since 1947 he has been a member of the Communist Party of the Soviet Union. He was elected to the U.S.S.R. Academy of Sciences as a Corresponding Member in 1960.

Melent'ev has concerned himself with power plants in the Soviet Union.

As of 1962, he has been Chairman of the Presidium of the East Siberian Branch of Siberian Department. In March 1962, he was elected delegate from R.S.F.S.R. to the Supreme Soviet.

Bibliography:

40 years of Soviet power engineering. District heating development in USSR. Teploenergetika 4, #11, 1957, 35-40. Engineering Index, 1958, p. 972.

and G. B. Levental. Correlation between the thermodynamic and power indices of heat-power plant efficiency. Engineering Index, 1958, p. 1180. Also in Applied Mechanics Review, #2022, 1959.

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MEL'NIKOV, NIKOLAI VASIL'EVICH (Mining Engineer)

N. V. Mel'nikov was born February 28, 1909. He graduated in 1933 from Sverdlovsk Mining Institute and has the degree of Doctor of Technical Sciences. From 1950 to 1956 he was professor at the Academy of Coal Industry. In 1955 he became Deputy Director of the Institute of Mining at the U.S.S.R. Academy of Sciences. Mel'nikov has been a member of the Communist Party of the Soviet Union since 1944. In 1953 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences and in June 1962 an Academician. From 1949 to 1954 he was a member of the Council of Ministers Bureau on Fuel and Metallurgical Industries. In 1961 he was Minister of the U.S.S.R. He was elected Deputy to the Supreme Soviet, sixth session. As of 1961, Mel'nikov was Director of the U.S.S.R. Academy of Sciences Institute of Mining. In March 1962, he was elected to the Council of Nationalities. As of 1962 he is Chairman of the U.S.S.R. Council of Ministers State Committee on Fuel Industries. He was awarded, in 1946, a Stalin Prize.

Mel'nikov's main works deal with the investigation of new systems of open pit mineral deposits and of rational methods in utilizing techniques of open pit mining.

Bibliography:

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Mining of Deposits in the U.S.S.R. Moscow: 1957.

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MEL'NIKOV, OLEG ALEKSANDROVICH (Astronomer)

O. A. Mel'nikov was born in 1912. Upon his graduation in 1933 from Khar'kov State University, he began working at the U.S.S.R. Academy of Sciences Main Astronomical Observatory (Pulkovo). In 1946 he also became a professor at Leningrad State University (Department of Astrophysics). In December 1961, he became Assistant Director of the U.S.S.R. Academy of

Sciences Astronomical Observatory (Pulkovo). In the same year, he was elected to the U.S.S.R. Academy of Sciences as a Corresponding Member. He was awarded the degree of Doctor of Physico-Math Sciences in 1945.

Mel'nikov's principal works are concerned with stellar and solar physics, interstellar matter, construction of astronomical apparatus, and the history of astrophysics and astronomical equipment building.

Bibliography:

On the reddening of early c-stars and the law of cosmic absorption. *Circ. Pulkovo obs.* 21, 1937, pp. 3-14.

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On the relation between general and selective light absorption in the galaxy. *Bull. Pulkovo obs.* 167, 1961, pp. 129-138.

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MENSHOV, DMITRII EVGENEVICH (Mathematician)

D. E. Menshov was born in Moscow April 18, 1892. He graduated from Moscow University in 1916 and in 1935 he received the Doctor of Physical-Mathematical Sciences degree. He was made professor in 1928 at Moscow University where he had taught since 1922. In 1953 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences. He was awarded a Stalin Prize in 1951.

Menshov's main work is in orthogonal functions and trigonometric series. He obtained a basic result in the uniqueness of representing functions by trigonometric series (1916), and gave a complete solution to the problem of representation of functions by trigonometric series (1940). Menshov is also the author of an important work on the theory of analytical functions.

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Biography:

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 Moscow, USSR

MERGELYAN, SERGEI NIKITOVICH (Mathematician)

S. N. Mergelyan was born May 19, 1928 in Simferopol. He graduated from Yerevan University in 1947, and received the degree of Doctor of Physical-Mathematical Sciences in 1949. From 1949 to 1956, he was employed at Yerevan University, and since 1945, at the Mathematics Institute of the Armenian Academy of Sciences. In 1953, he became a professor at Moscow University. He was made an Academician of the Armenian S.S.R. Academy of Sciences in 1956, and was elected to the U.S.S.R. Academy of Sciences as a Corresponding Member in 1953. He received a Stalin Prize in 1952.

Mergelyan worked on the theory of the best approximation of functions of a complex variable by polynomials.

As of 1961, Mergelyan was Director of the Scientific Research Institute of Mathematical Computers and a member of the Presidium of the Armenian S.S.R. Academy of Sciences. Sciences.

Bibliography:

Some Questions on the Constructive Theory of Functions.
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Uspekhi Mat. Nauk, 1952, 7, #2.

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Mat. Nauk, 1953, 8, #4.

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MESHCHERYAKOV, MIKHAIL GRIGOR'EVICH (Physicist)

M. G. Meshcheryakov was born September 17, 1910. He graduated from Leningrad University in 1936. In 1937-1947, he worked at the U.S.S.R. Academy of Sciences Radium Institute. He became a professor at Moscow University in 1954, and has been working at the Joint Institute of Nuclear Research since 1956. He has been a member of the Communist Party of the Soviet Union since 1940. In 1953 he was elected to the U.S.S.R. Academy of Sciences as a Corresponding Member.

Meshcheryakov has worked on the physics of high energy particles. He and his associates experimentally showed the change in the interaction of nucleons with nucleons at 460-660 million electron volts.

Bibliography:

On the absorption of fast neutrons by heavy nuclei. Doklady Akad. Nauk S.S.S.R., 1945, 48, #8.

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MIGDAL, ARKADII BEISUNOVICH (Physicist)

A. B. Migdal was born March 11, 1911. He graduated from Leningrad University in 1936. In 1944 he became a professor at Moscow Engineering Physical Institute. He has been working at the U.S.S.R. Academy of Sciences since 1945. In 1953, he was elected to the U.S.S.R. Academy of Sciences as a Corresponding Member.

Migdal has been concerned with nuclear theory and quantum mechanics. He developed a theory on dipole radiation of atomic nuclei and a theory on ionization of atoms during nuclear reactions. He has also worked in cosmic rays and on the use of the quantum field theory in the many body problems.

Bibliography:

Ionization of atoms during alpha and beta disintegration.

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MIKHAILOV, ALEKSANDR ALEKSANDROVICH (Astronomer)

A. A. Mikhailov was born April 26, 1888. He graduated from Moscow University in 1911, and from 1918 to 1948 he was a professor at the University. In 1939 he became Chairman of the Astronomical Council of the U.S.S.R. Academy of Sciences and in 1947 Director of the Main Astronomical Observatory of the U.S.S.R. Academy of Sciences in Pulkovo. In 1949 Mikhailov was made a member of the main editorial board of the Great Soviet Encyclopedia. He was elected a Corresponding Member of the U.S.S.R. Academy of Sciences in 1943. Since 1956 he has been a member of the Communist Party of the Soviet Union. In 1934-1959 he was Chairman of the Central Council of the All Union Astronomic-Geodesic Society. He was, from 1946 to 1948, vice president of the International Astronomical Union.

Mikhailov is a specialist in the prediction of solar eclipses. He presented a theory of solar and lunar eclipses, the occultations of planets by the moon, the transits of planets across the solar disk, and compiled a table for precalculating eclipses. He headed five expeditions for observations of total solar eclipses. In 1936 he investigated the deflection of light rays in the field of solar gravity for which he constructed a special unit. He was one of the initiators of a general gravimetric survey in the U.S.S.R. (1932). He developed a method of determining the shape of the earth from determinations of gravity. He edited several stellar atlases.

Bibliography:

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Biography:

Molodenskii, M. A. Work of A. A. Mikhailov in the Area of Gravimetry and the Theory on the Shape of the Earth. Collection of Scientific-Technical and Industrial Articles for Geodesy, Cartography, Topography, Aero-Photography and Gravimetry, 1948, #17.

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MIKHEEV, MIKHAIL ALEKSANDROVICH (Physical Power Engineer)

M. A. Mikheev was born May 25, 1902. In 1927 he graduated from the Leningrad Polytechnic Institute. From 1925 to 1934 he worked in the Physico-Technical Institute of the U.S.S.R. Academy of Sciences. Beginning in 1936, he has also worked at the Moscow Energy Institute. Mikheev was elected a Corresponding Member of the U.S.S.R. Academy of Sciences in 1946 and in 1953 an Academician. In 1941 and in 1951 he was awarded Stalin Prizes.

The scientific work of Mikheev is in the field of heat transfer. He studied the processes of heat transfer of various heat carriers under free and forced convection.

Bibliography:

and M. V. Kirpichev. Modelling Heat Equipment (1936, Stalin Prize 1941).

and M. V. Kirpichev. Bases of Heat Transfer, 2nd ed. (1949, Stalin Prize 1951).

Heat production in turbulent motion of liquids in turbines. *Izvest. Akad. Nauk S.S.S.R., Otdel. Tekh. Nauk*, 1952, #10.

Biography:

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MIKOYAN, ARTYOM IVANOVICH (Aeronautical Engineer)

A. I. Mikoyan was born August 5, 1905. He graduated in 1936 from the N. E. Zhukovskii Military Air Academy. He is a Major General in the Engineering-Technical Service. Since 1925 he has been a member of the Communist Party of the Soviet Union. In 1953, Mikoyan was elected Corresponding Member of the U.S.S.R. Academy of Sciences. He was Deputy to the U.S.S.R. Supreme Soviet, third through fifth convocations. He has been awarded a Stalin Prize.

In 1939-40 Mikoyan, together with M. I. Gurevich, designed the fighter plane, MIG-1, for aerial combat at high altitudes. In the same year, 1940, the plane was modified and under the name, MIG-3, found wide front line use during World War II (1941-45). Mikoyan is one of the pioneers of jet aviation in the

U.S.S.R. In 1946, at the Tushinskii Air Field, the first turbo-jet plane designed by Mikoyan was demonstrated.

In March 1962, Mikoyan was elected to the Council of Nationalities.

Bibliography:

Biography:

A. Minaev. Planes of A. E. Mikoyan Design. Vestnik of the Air Force, 1951, No. 7.

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MIKULIN, ALEKSANDR ALEKSANDROVICH (Aeronautical Engineer)

A. A. Mikulin was born February 2, 1895. He is a Major General in Engineer-Technical Service. In 1934 he was elected an Academician of the U.S.S.R. Academy of Sciences. He was a Hero of Socialist Labor in 1940. Since 1952 he has been a member of the Communist Party of the Soviet Union.

In 1923 Mikulin began to work as a designer in the Scientific Automotor Institute. In 1929, he worked out a plan for AM-34 engines, which in 1931 successfully underwent tests. This engine was installed in aircraft in which, in 1937, V. P. Chkalov and M. M. Gromov carried out distant non-stop flights across the North Pole to the U.S.A., and in airplanes which, in 1937, flew from Moscow to the North Pole. Constructed under Mikulin's direction, an AM-35 engine was installed in a MIG aircraft. At the time of the World War II, 1941-45, he directed the design of powerful aircraft engines, AM-38f (which were installed in the Sturmovik IL-2) and other designs for aircraft engines. Mikulin introduced the use of rotating blades for the regulation of superchargers and high pressure feed and cooling of intake air. He worked out the first Soviet turbocompressor and variable pitch propeller. After 1945, a group directed by Mikulin developed jet engines.

Biography:

A. A. Mikulin, Hero of Socialist Labor, Major General of the IAS. Technics of the Air Fleet, 1945, #2.

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MILLIONSHCHIKOV, MIKHAIL DMITRIEVICH (Mechanical Engineer and Physicist)

M. D. Millionshchikov was born January 16, 1913. He graduated from Groznyi Oil Institute in 1932 and taught there. In 1934-1943 he taught at the Moscow Aviation Institute and subsequently at the Moscow Engineering-Physics Institute where he became professor in 1949. From 1944 to 1949 he worked at the Institute of Mechanics of the U.S.S.R. Academy of Sciences. Millionshchikov has been a member of the Communist Party of the Soviet Union since 1947. In 1953 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences, and in June 1962, an Academician. He is the recipient of a Stalin Prize.

Millionshchikov's main work is in theory of turbulence, the theory of filtration, and applied gas dynamics. He investigated isotropic turbulence in the terminal stages of its degeneration. In the theory of filtration, he developed methods for exploiting oil wells. In applied gas dynamics, he studied gas ejectors and their use.

As of 1961, Millionshchikov was a Vice President of the U.S.S.R. Academy of Sciences.

Bibliography:

and S. A. Khristianovich and others. Applied Gas Dynamics. Moscow: 1948.

Degeneration of homogeneous isotropic turbulence in a viscous non-compressible liquid. Doklady Akad. Nauk S.S.S.R., New Series, 1939, 22, #5.

Theory of homogeneous isotropic turbulence. Doklady Akad. Nauk S.S.S.R., 1941, 32, #9.

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MINTS, ALEKSANDR LVOVICH (Engineer)

A. L. Mints was born December 27, 1895. In 1918 he graduated from the Don University and in 1932 from Moscow Institute of Communication Engineers. From 1920 to 1928, he served in radio-technical units and in scientific establishments of the Red Army. He worked in laboratories of the radio industry and in construction of radio stations from 1928 to 1934 and during some of that time, 1929 to 1930, he was also teaching in the Leningrad Institute of Communications. He became Director, in 1946, of the Radio-Engineering Institute of the

Academy of Sciences U.S.S.R. In 1946 Mints was elected a Corresponding Member of the U.S.S.R. Academy of Sciences, and in 1958 an Academician. He was a recipient of Stalin Prizes in 1946 and in 1951. In 1950 he was awarded Popov Gold Medal by the U.S.S.R. Academy of Sciences for his work in the construction of radio stations and in radio-engineering.

The basic work of Mints is concerned with radiotelephone modulation, design of high power radio broadcasting stations, directional antennae for long and short wave radio stations, demountable transmitting tubes, new methods of radio-measurement, and with radio-engineering and electronics of elementary particle accelerators. Mints directed the planning and construction of powerful radio stations (i.e., VTsSPS, 1929; Comintern, 1933; RV-96, 1938; Kuibishevskii, 1943), and also participated in the design of accelerators of the Joint Institute of Nuclear Studies, 680 MEV Phasotron (1949, 1953) and the 10 BEV Synchrotron (1957).

Bibliography:

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Problems of radio-engineering and electronics of powerful cyclical accelerators of heavy charged particles. Radiotekh. i Elektron., 1956, #5.

Biography:

Laureate of the Popov Gold Medal. Radio, 1950, #6.

Distinguished Soviet radio specialist. Vest. Svyazi. Tekhnika Svyazi, 1950, #6.

Laureate of the Popov Gold Medal. Radiotekh., 1950, #4.

A. L. Mints. To his 60th Birthday. Radiotekh., 1955, 10, #2.

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MIRCHINK, MIKHAIL FEDOROVICH (Oil Geologist)

M. F. Mirchink was born June 15, 1901. He graduated in 1930 from Moscow Mining Academy. In 1943 he became professor at Moscow Mining Institute. Since 1941 he has been a member of the Communist Party of the Soviet Union. In 1953

Mirchink was elected a Corresponding Member of the U.S.S.R. Academy of Sciences. In 1949 and 1950 he received Stalin Prizes.

The works of Mirchink deal with regional geology of oil-bearing territories of the Caucasus and the Russian Platform, and also with the exploitation of oil deposits. He established in 1932 a course on oil field geology at the Azerbaijan Industrial Institute. He combined scientific work with large-scale practical activity; he has participated in the discovery of oil. He, together with others, published the work, "Scientific Basis for Development of Oil Deposits" (1948).

As of 1961, Mirchink was Director of the Institute of Geology and Processing of Mineral Fuels.

Bibliography:

Stratigraphic Deposits of Oil. Baku: 1943.

Oil Field Geology. Moscow-Leningrad: 1946.

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MISHIN, VASILII PAVLOVICH (Mechanical Engineer)

V. P. Mishin was born January 18, 1917. After graduating in 1941 from the Moscow Aviation Institute, he worked in various designing and scientific research organizations. Since 1943 he has been a member of the Communist Party of the Soviet Union. In 1958 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences.

Mishin's main works are devoted to various problems of applied mechanics.

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MISHUSTIN, EVGENII NIKOLAEVICH (Microbiologist)

E. N. Mishustin was born February 22, 1901. He graduated in 1924 from Moscow Timiryazev Agricultural Academy. In 1939 he began working at the Institute of Microbiology of the U.S.S.R. Academy of Sciences. Since 1953 he has been a Corresponding Member of the U.S.S.R. Academy of Sciences. In 1951 he was awarded a Stalin Prize.

Mishustin's main works deal with agricultural microbiology. He is the author of the work "Thermophilic Microorganisms in Nature and Practice" (1950).

Bibliography:

Scientific Basis of Processing Feed in Silos. 2nd ed.

Moscow-Leningrad: 1933.

Course on Agricultural Microbiology. Moscow-Leningrad: 1934.

Ecologic-Geographic Change of Soil Bacteria. Moscow-Leningrad: 1947.

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M. S. Molodenskii was born June 16, 1909. Upon graduating from Moscow University in 1932, he worked at the Central Scientific Research Institute of Geodesy, Aero Photography and Cartography. In 1946 he worked at the U.S.S.R. Academy of Sciences Geophysical Institute, and in 1956, at the U.S.S.R. Academy of Sciences Institute of Terrestrial Physics. He was awarded a Stalin Prize in 1946 and 1951. In 1946 he became a Corresponding Member of the U.S.S.R. Academy of Sciences.

Molodenskii worked out a theory on utilization of measurements of the gravitational field of the earth for geodesic purposes. He proposed a method of astronomic-gravimetric leveling, a new method of determining the shape of the earth. He designed the first spring gravimeter in the U.S.S.R. He investigated the elastic properties of the earth and the earth's core.

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Moshkin's main investigations are devoted to the development of industrial methods for chemical synthesis. His works on the synthesis of aliphatic acids by oxidation of paraffins aided in the organization of producing valuable raw materials for the soap and the chemical industries. He developed methods of separating and characterizing phenols in primary tar of humus coal. He proposed industrial methods for the synthesis of intermediate products and plasticizers for plastics.

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MUSKHELISHVILI, NIKOLAI IVANOVICH (Mathematician and Mechanics Expert)

N. I. Muskhelishvili was born February 16, 1891. In 1914 he graduated from Petersburg University. He became a professor at Tbilisi State University in 1922 and also at the Polytechnic Institute in Tbilisi. On his initiative, the Tbilisi Mathematics Institute was established in 1935. Muskhelishvili was elected a Corresponding Member of the U.S.S.R. Academy of Sciences in 1933 and in 1939 an Academician. In 1941 he became the President of the Georgian S.S.R. Academy of Sciences. He has been a member of the Communist Party of the Soviet Union since 1940 and a Deputy to the U.S.S.R. Supreme Soviet during all the six convocations. In 1945 he was a Hero of Socialist Labor and in 1941 and 1947, a recipient of Stalin Prizes.

Muskhelishvili's main investigations are in the theory of elasticity, integral equations, and boundary-value problems in the theory of functions. He utilized the theory of functions of a complex variable in problems of the theory of elasticity. With the aid of complex representation of displacements and tensions, the main problems of a two dimensional theory of elasticity in a static case are reduced. The work of Muskhelishvili and his students solved the major problems of the two-dimensional theory of elasticity in a static case. Investigations were also carried out by Muskhelishvili and his students in the theory of linear boundary-value problems of analytical functions

and in the theory of one-dimensional integral equations with specific nuclei.

As of 1961 Muskhelishvili was Chairman of the National Committee of the U.S.S.R. for Theoretical and Applied Mechanics. In 1962 he was elected to the Council of Nationalities.

Muskhelishvili was a Member of the Presidium of the U.S.S.R. Academy of Sciences as of 1961, and was Director of the A. M. Razmadze Institute of Mathematics of the S.S.R. Georgian Academy of Sciences.

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E. R. Mustel' was born June 3, 1911. He graduated from Moscow University in 1935 and in 1939 returned there to work. From 1944-1951 he was a professor at Moscow University. In 1946 he went to work at the Astrophysical Observatory of the U.S.S.R. Academy of Sciences and in 1957 at the Astronomical Council of the U.S.S.R. Academy of Sciences. He has been a Corresponding Member of the U.S.S.R. Academy of Sciences since 1953. In 1952 he was awarded a Stalin Prize.

Mustel' developed a theory of radiant equilibrium of stellar atmospheres for the absorption coefficient dependent upon frequency. Mustel' offered a physical picture of the processes occurring during new star's formation. He investigated corpuscular radiation from the sun and the physical phenomena in the active areas of the sun.

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NALIVKIN, DMITRII VASIL'EVICH (Geologist and Paleontologist)

D. V. Nalivkin was born August 25, 1889. He graduated from the Petrograd Mining Institute in 1915, and in 1920 became a professor at this Institute. From 1917 to 1949, he worked on the Geological Committee (All-Union Scientific Research Geologic Institute). He was chairman from 1946 to 1951 of the Presidium of the Turkmen branch of the U.S.S.R. Academy of Sciences. From 1946 to 1953 he was the Director of the Laboratory on Limnology of the U.S.S.R. Academy of Sciences. Nalivkin was elected a Corresponding Member of the U.S.S.R. Academy of Sciences in 1933 and in 1946 an Academician. Since 1951 he has been a Honorary member of the Turkmen S.S.R. Academy of Sciences. In 1937 he became the chief editor of a geological survey map of the Soviet Union. He was the

recipient of a Stalin Prize in 1946. In 1949 Nalivkin was awarded the Gold Medal of A. P. Parpinskii by the U.S.S.R. Academy of Sciences. He was given a Lenin Prize in 1957 for scientific leadership in compiling a geological map of the U.S.S.R. (in scale of 1/2,500,000, published 1956).

Nalivkin's major work is devoted to stratigraphy and paleogeography of the Paleozoic Era of the Urals, of the territory close to the Urals, of Central Asia, and of the Russian plateau. Nalivkin is an authority on the Devonian deposits of the U.S.S.R. Detailed study of Devonian fauna, brachiopods, has allowed him to work out the details of the stratigraphy of mid-Devonian and upper Devonian deposits in sections of the Timan Mountain ridge and the Russian plateau. His research in the Urals made the stratigraphy and paleogeography of this territory more precise, has permitted separation of middle and upper Devonian and lower Carboniferous deposits by layers and showed considerable spreading of Silurian and earlier deposits. Studies made by Nalivkin resulted in greater knowledge of the geology and minerals of Central Asia, and also aided in the determination of stratigraphic positions of Ural bauxite deposits and oil deposits in the territories close to the Urals.

Nalivkin was Chairman of the National Committee for U.S.S.R. Geologists as of 1961.

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Nekrasov works on correlation of structure and properties of chemical compounds. He proposed in 1955 an explanation of the trans influence in complex compounds, in 1948 a theory of the structure of boranes, in 1946 an equation for the polarity of bonds and effective charges of atoms in molecules of the AB_m type. He is the author of a text book, "Course on General Chemistry" which has had 12 editions (2 vols., 1935, 12th edition, 1955) which has been translated into many languages.

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Nenadkevich studied new types of mineral raw materials and developed methods for obtaining rare metals from ores. In 1916-20 Nenadkevich worked out the technology of producing metallic bismuth from domestic raw materials and conducted its first experimental smelting. In 1926 he chemically ascertained the age of one of the most ancient minerals—uraninite.

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A. N. Nesmeyanov was born September 9, 1899. He graduated from Moscow University in 1922 and began his work there. In 1930 he was instrumental in establishing a Laboratory of Organic Chemistry at the Institute of Fertilizers and Insecto-fungicides and was its Chief until 1934. He helped the

University of Moscow organize a Laboratory of Metallo-Organic Compounds in 1934. In 1935 he was made professor at the University. At the same time, beginning in 1934, he worked at the Institute of Organic Chemistry of the U.S.S.R. Academy of Sciences where in 1935 he organized a Laboratory of Metallo-Organic Compounds. He became Director of the Institute in 1939. From 1948 to 1951 he was President of Moscow University and was active in acquiring a new building. In 1953, Nesmeyanov helped found the Institute of Scientific Information of the U.S.S.R. Academy of Sciences. Through his initiative, in 1954, an Institute of Organo-Elemental Compounds of the U.S.S.R. Academy of Sciences was set up and he was made the Director. Nesmeyanov has been active in social and political work. He became a member of the Communist Party of the Soviet Union in 1944 and was Deputy to the U.S.S.R. Supreme Soviet. Also he was a member of the All-World Council for Peace and the Soviet Committee in Defense of Peace. In 1939 Nesmeyanov was made a Corresponding Member, and in 1943 an Academician of the U.S.S.R. Academy of Sciences. He was elected President of the U.S.S.R. Academy of Sciences in 1951. Nesmeyanov is the leader of the Soviet school of metallo-organic specialists. In 1943 he was a winner of a Stalin Prize.

Nesmeyanov's main scientific work is in chemistry of metallo-organic compounds: lithium, boron, nitrogen, sodium, magnesium, aluminum, silicon, phosphorus, sulfur, selenium, titanium, chromium, iron, copper, zinc, germanium, arsenic, zirconium, molybdenum, cadmium, tin, antimony, tungsten, mercury, thallium, lead, bismuth. In 1929 Nesmeyanov proposed a diazo method of synthesis of mercury-organic compounds, which he and his associates later used for synthesis of metallo-organic compounds of thallium, tin, lead, germanium, arsenic, antimony and bismuth. He also studied mutual transformations of metallo-organic compounds, utilizing these reactions for synthesis of previously unknown types of metallo-organic compounds of zinc, cadmium, aluminum, thallium, tin and others from mercury-organic compounds. He proved that products of addition of salts of non-transition metals to unsaturated compounds are metallo-organic and not complex compounds, discovered new classes of these compounds, and studied their chemistry. Nesmeyanov also investigated unsaturated metallo-organic compounds. He made a detailed study of the stereochemistry of their mutual transformations. Through his study of metallic derivatives of oxo-enol systems and alpha-mercurated oxo-compounds, he showed the relation between the

structure and the reactivity of metallic derivatives of tautomeric systems and later of the tautomeric systems themselves. Nesmeyanov, and his associates, ascertained the mechanism of electrophilic replacement in saturated carbon atoms. He obtained diphenylchloronium, diphenylbromium, triphenyloxonium salts and studied the mechanism of decomposition of these -onium salts and of various diazonium and iodonium compounds. Nesmeyanov and associates made a thorough study of the reactions of the new metallo-organic, "sandwich" compounds, the ferrocene, and ascertained their aromatic character. He also carried out a series of syntheses based on olefin telomerization. He and K. A. Kocheshkov edited a series of monographs "Synthetic Methods in the Field of Metallo-Organic Compounds." Based on his experiment, Nesmeyanov advanced a series of theoretical ideas on the future development of the theory of chemical structure.

Nesmeyanov was Chairman of the Council for Coordinating Scientific Work of the Academies of Sciences of Union Republics. He was Chairman of the Editorial Publishing Council of the U.S.S.R. Academy of Sciences.

In 1962, Nesmeyanov was awarded the M. V. Lomonosov Gold Medal.

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NEUMANN (NEYMAN), LEONID ROBERTOVICH (Electrical
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L. R. Neumann was born April 6, 1902. He graduated from
the Leningrad Polytechnical Institute in 1930, and in 1940 began
teaching there as a professor. From 1931 to 1935 he was Di-
rector of a group of high voltage centers of the Leningrad
Electro-Physical Institute. He worked at the U.S.S.R. Academy
of Sciences Institute of Energetics from 1946 to 1960 and since
then has been working at the Leningrad Institute of Electro-
mechanics. In 1953, he was elected to the U.S.S.R. Academy of
Sciences as a Corresponding Member.

Neumann's main works deal with investigating phenomena in non-linear electric circuits, the study of the skin-effect in ferromagnetic bodies, the electromagnetic processes in electric systems with powerful ion converting units, and with direct current transmissions. He has participated in the work of the International Electrotechnical Commission in the fields of scientific terminology and of systems of electric and magnetic units.

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and P. L. Kalantarov. Theoretical Basis of Electrical Engineering, 5th ed. Leningrad-Moscow: 1959.

and M. P. Kostenko, G. N. Blavdzovich. Electromagnetic Processes in Systems with Powerful Rectifying Units. Moscow-Leningrad: 1946.

Skin-Effect in Ferromagnetic Bodies. Leningrad-Moscow: 1949.

and S. R. Glinernick, A. V. Emelyanov, V. G. Novitski. Direct Current Power Transmission as a Part of Power Systems. Moscow-Leningrad: 1962.

Biography:

Professor L. R. Neumann. On the 50th Anniversary Since the Date of Birth. *Electricity*, 1952, #8.

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NIKITIN, NIKOLAI IGNAT'EVICH (Chemist)

N. I. Nikitin was born March 12, 1890. He graduated in 1913 from the Institute of Forestry in Petersburg. In 1929 he became professor at the S. M. Kirov Leningrad Forest-Technical Academy. He has been a Corresponding Member of the U.S.S.R. Academy of Sciences since 1939 and of the Finnish Chemical Society since 1959.

Nikitin has worked in cellulose and wood chemistry. He obtained new solutions of cellulose derivatives in alkali by weak esterification and freezing, obtained the fibers from the solutions of low-substituted xanthogenates and obtained the films of alkali-soluble low-substituted nitrocellulose and carboxymethylcellulose. He investigated the role of packing of cellulose molecules on the lyophilic properties of fibers and their relation to the quantity of nonfreezing water in the fibers. He

also studied the reactivation of cellulose by means of freezing and inclusion and slight esterification of the fibers. He investigated the chemical composition of many wood species of the U.S.S.R. and developed methods for obtaining sulfate and sulfite cellulose from wood of larch (*Larix daurica* and *L. sibirica*) with the utilization of its gum. He also developed a new synthesizing reaction of acetylene and alkali on lignin and described the action of ethylene-oxide on lignin. Nikitin was one of the pioneers in the development of wood and cellulose chemistry in the U.S.S.R. and he wrote several monographs on this subject.

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Biography:

F. P. Komarov and S. D. Antonovskii. Nikolai Ignat'evich Nikitin. Zhur. Obshchei Khim., 1950, #4, 557-562.

N. You. Solechnie. Nikolai Ignat'evich Nikitin. J. Appl. Chem. U.S.S.R. 33, 521-528 (1960). (English trans.)

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NIKOLAYEV, ANATOLII VASIL'EVICH (Chemist)

A. V. Nikolayev was born November 27, 1902. He graduated in 1924 from Leningrad University. In 1927-31 he was a leader of the Pavlodar Salt Expedition of the Commission on the Study of Natural Productive Forces of the U.S.S.R. Academy of Sciences and in 1931-35, of the Complex Kulundinsk Expedition of the Soviet on the Study of the Productive Forces of the U.S.S.R.

Academy of Sciences. He started working in 1934 at the Institute of General and Inorganic Chemistry of the U.S.S.R. Academy of Sciences. In 1936-41 he taught at the Moscow Polygraphic Institute and in 1945-57 at the Moscow Institute of Non-Ferrous Metals and Gold, where he was made professor in 1946. In 1957 Nikolaev became Director of the Institute of Inorganic Chemistry of the Siberian branch of the U.S.S.R. Academy of Sciences. He was elected in 1958 a Corresponding Member of the U.S.S.R. Academy of Sciences. In 1947 he was awarded the V. I. Vernadskii Prize for his research summarized in the monograph "Physico-Chemical Study of the Natural Borates."

Nikolayev's main work deals with physico-chemical analysis of salt systems for the purpose of elucidating the formation of natural salt and its industrial processing, thermal analysis, radiochemistry. He developed thermal analysis of complex compounds of platinum, investigated the chemistry and separation of rare-earth elements, and studied the extraction of inorganic substances by organic solvents.

As of 1961, Nikolayev was a Member of the Presidium of the Siberian Branch U.S.S.R. Academy of Sciences.

Bibliography:

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Kolundinsk Salt Lakes and Methods of Processing. Novosibirsk: 1935.

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NIKOLAEV, IVAN IVANOVICH (Railroad Engineer)

I. I. Nikolaev was born April 11, 1893. Upon graduating from the Moscow Institute of Communication and Line Engineers in 1921, he taught there until 1957, having become a professor in 1935. From 1921 to 1938, he taught at the Moscow Technical College. From 1947 to 1951 he was professor at the Academy of Railroad Transport. In 1955 he began work at the Institute of Complex Transport Problems of the U.S.S.R. Academy of Sciences. He became a member of the Communist Party of the Soviet Union in 1942. In 1947 he was awarded the title Honored Scientist of R.S.F.S.R. He was elected, in 1953, a Corresponding Member of the U.S.S.R. Academy of Sciences.

The works of Nikolaev deal with questions of dynamics and steam distribution of locomotives.

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Dynamics and Steam Distribution of a Locomotive, 2nd ed. Moscow: 1953.

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Biography:

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NIKOL'SKII, BORIS PETROVICH (Physical Chemist)

B. P. Nikol'skii was born October 14, 1900. After graduating from Leningrad University in 1924, he worked there and in 1939 became professor. In 1953 he was elected Corresponding Member of the U.S.S.R. Academy of Sciences.

Nikol'skii investigated processes of ion exchange between aqueous solutions and various solid systems—soils, ionites, and others. He developed a theory on these processes, which is used in ion-exchange chromatography. He also proposed an ion-exchange theory for a glass electrode.

As of 1961, Nikol'skii was Director of the Institute of Mechanics of the U.S.S.R. Academy of Sciences.

Bibliography:

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Uspekhi Khim., 1939, 8, #10.

Theory of a glass electrode. Zhur. Fiz. Khim., 1953, 27, #5-6.

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NOVIKOV, IVAN IVANOVICH (Physicist)

I. I. Novikov was born January 29, 1916. In 1930 he graduated from Moscow University, and worked for scientific organizations of the Soviet Navy from 1940 to 1948. In 1950 he became a professor at the Moscow Institute of Physical Engineering of which he was made Director in 1956. From 1954 to 1957, he was assistant to the Chief Academic Secretary of the U.S.S.R. Academy of Sciences Presidium. He was Editor-in-Chief of the journal "Atomic Energy" in 1956, and since 1957 has been the Director of the Institute of Thermal Physics of the Siberian branch of the U.S.S.R. Academy of Sciences. In 1958, he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences. He has been awarded a Stalin Prize.

Novikov has studied thermodynamics of gases, gas dynamics, heat transfer, use of the theory of similarity in the study of thermophysical properties of substances, investigation of the thermodynamic properties of heat carriers and atomic energy.

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and others. Liquid-metal Heat Carriers. Moscow: 1958.

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NOVIKOV, PYOTR SERGEEVICH (Mathematician)

P. S. Novikov was born August 28, 1901. He graduated in 1927 from Moscow University. In 1934 he started working at the Mathematical Institute of the U.S.S.R. Academy of Sciences. He was elected a Corresponding Member of the U.S.S.R. Academy of Sciences in 1953 and in 1960 an Academician. In 1957 he was awarded a Lenin Prize, and again in 1961.

Novikov's main works are concerned with set theory and mathematical logics.

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NOVOSELOVA, ALEKSANDRA VASIL'EVNA (Chemist)

A. V. Novoselova was born March 24, 1900. She graduated from Moscow University in 1924 and had worked there since 1920. In 1946 she was made professor at the University. She

was elected in 1953 a Corresponding Member of the U.S.S.R. Academy of Sciences. In 1948 she was awarded a Stalin Prize.

Novoselova developed analytical methods for beryllium, and for complexes in system $\text{MoO}_3\text{-H}_2\text{O}$.

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and K. N. Semenenko. Interaction of hydroxy-acetate of beryllium with hydroxymonochloracetate of beryllium. Zhur. Neorg. Khim., 1956, 1, #10.

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NOVOZHILOV, VALENTIN VALENTINOVICH (Mechanics Specialist)

V. V. Novozhilov was born May 18, 1910. After graduating from Leningrad Physico-Technical Institute, he worked in a series of scientific research establishments. He started teaching at the Leningrad University in 1946 and in 1949 became a professor. Since 1958 he has been a Corresponding Member of the U.S.S.R. Academy of Sciences.

Novozhilov's major works deal with the theory of elasticity, theory on plasticity, theory of shells, and also their application to problems in ship building.

Bibliography:

Theory of Thin Shells. 2nd ed. Leningrad: 1951.

Basis of Non-Linear Theory of Elasticity. Leningrad-Moscow: 1948.

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NUZHHDIN, NIKOLAI IVANOVICH (Biologist)

N. I. Nuzhdin was born April 17, 1904. He graduated in 1929 from Teachers Institute in Yaroslavl. In 1935 he began working in the Institute of Genetics at U.S.S.R. Academy of Sciences. He has been a member of the Communist Party since 1927. In 1953 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences.

Nuzhdin's works are in the field of genetics, radiobiology, and evolution.

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OBREIMOV, IVAN VASIL'EVICH (Physicist)

I. V. Obreimov was born March 8, 1894. In 1915 he graduated from Petrograd University. He worked at the State Optical Institute from 1919 until 1924 when he began work at the Leningrad Physico-Technical Institute. Subsequently he worked at the Physico-Technical Institute and from 1929 to 1937 was the Director. In 1933 Obreimov was elected a Corresponding Member of the U.S.S.R. Academy of Sciences and in 1958 an Academician. He was awarded a Stalin Prize in 1946.

Obreimov conducted scientific investigations on the physics of crystals and molecular spectroscopy. He studied plastic deformation and optical properties of single crystals and spectroscopy of crystals at low temperatures. In his monograph, On the application of Fresnel diffraction for physical and Technical measurements (1945), (Stalin Prize 1946),

Obreimov proposed and developed a method for determining dispersion which can be applied to a study of crystals undergoing chemical reactions and to control of fractionation of mixtures.

In 1960 Obreimov was awarded the S. I. Vavilov Gold Medal.

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OBRUCHEV, SERGEI VLADIMIROVICH (Geologist)

S. V. Obruchev was born February 3, 1891. He is the son of the Russian geologist V. A. Obruchev, 1863-1956. S. V. Obruchev graduated from Moscow University in 1915. While conducting geological studies of the Yenisei basin from 1917 to 1924, he delineated and described the Tungusskii coal basin. He was awarded a Stalin Prize in 1946, and became a Corresponding Member of the U.S.S.R. Academy of Sciences in 1953.

In 1926-35 Obruchev studied the practically unknown regions of Northeastern U.S.S.R., the river basins of Indigirka and Kolyma, Chukotskii region. He developed schemes of ore description, geomorphology and geological structure of Northeastern Asia. He proposed uniting the mountain structures of the middle of Indigirka River and Kolyma under the name of Cherskii Ridge. In 1937-54 he studied the ridge of Eastern Sayan, Khamar-Daban and Eastern Tuva. He also did research on the geology and geomorphology of other regions of the U.S.S.R. He is the author of a series of scientific-popular books (Unknown Mountains of Yakutiya, 1928; On the Persei Through Polar Seas, 1929; Kolyma Land, 1933; A Plane in Eastern Arctic, 1934; Into Unexplored Territories, 1954.) He compiled a Handbook of a Traveler and Student of Local Lore (2 volumes, 1949-1950).

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OBUKHOV, ALEKSANDR MIKHAILOVICH (Geophysicist)

A. M. Obukhov was born May 5, 1918. After having graduated from Moscow University in 1940, he worked at the Geophysical Institute of the U.S.S.R. Academy of Sciences. He holds a doctorate in physical-mathematical sciences. In 1956, he became director of the U.S.S.R. Academy of Sciences Institute of Atmospheric Physics. In 1953, he became a Corresponding Member of the U.S.S.R. Academy of Sciences.

Obukhov has been concerned with the statistical theory of turbulence and its application in meteorology. Together with A. N. Kolmogorov, he developed a theory of the local structure of turbulence. He also experimentally investigated atmospheric turbulence and worked in dynamic meteorology and the theory of probability.

As of 1961, Obukhov was Chairman of the Commission on Physics of Atmosphere.

Bibliography:

Distribution of Energy in the Spectrum of a Turbulent Flow. Izvest. Akad. Nauk S.S.S.R., Ser. Geogr. i Geofiz., 1941, #4-5.

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ODING, IVAN AVGUSTOVICH (Metallurgist)

I. A. Oding was born July 6, 1896. He graduated in 1921 from the Technological Institute of Petrograd. From 1930 to 1942 he was professor at the Leningrad Polytechnic Institute. In 1942-1947 he was the Director of the Central Scientific Research Institute of Technology and Machine Building; in 1947-1953 he worked at the Institute of Machine Studies of the U.S.S.R. Academy of Sciences. Beginning in 1953, he has carried out research at the Institute of Metallurgy of the U.S.S.R. Academy of Sciences. He has been a member of the Communist Party of the Soviet Union since 1942. In 1946 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences. He received a Stalin Prize in 1946, and in 1956 was an Honored Scientist of the R.S.F.S.R.

Oding's main works are concerned with problems in the strength of metals. He worked on the establishment of new methods for testing mechanical properties of metals, such as cyclical viscosity and relaxation.

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Biography:

Ivan Avgustovich Oding (On the 60th Anniversary Since the Date of Birth) in Factory Laboratory. 1956, #8.

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OKHOTSIMSKII, DMITRII YEVGEN'EVICH (Mechanics Specialist)

D. Ye. Okhotsimskii was born in 1921. In 1946 he graduated from the mechanical-mathematics faculty of Moscow State University. In that year he also initiated postgraduate studies, later became a junior, and then senior scientific worker, and in 1953 departmental Chief of the U.S.S.R. Academy of Sciences Mathematics Institute. He became, in 1959, a professor of the theoretical mechanics department of Moscow State University. He was awarded a Lenin Prize in 1957, and has been a member of the Communist Party of the Soviet Union since 1951. In 1960 he became a Corresponding Member of the U.S.S.R. Academy of Sciences.

Okhotsimskii has worked on earth satellites.

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OPARIN, ALEKSANDR IVANOVICH (Organic Chemist)

A. I. Oparin was born March 3, 1894. In 1917 he graduated from Moscow University, and in 1929 he became a professor there. He helped organize the Institute of Biochemistry of the U.S.S.R. Academy of Sciences, began working there in 1935, and became the Director in 1946. He was elected Corresponding Member of the U.S.S.R. Academy of Sciences in 1939 and in 1946 an Academician. From 1949 to 1956 he was Academician-Secretary of the Department of Biological Sciences of the U.S.S.R. Academy of Sciences. Oparin has been a prominent national figure in the Soviet Union. In 1950 he was appointed a member of the Soviet Committee in Defense of Peace and a member of the International Council for Peace. He became, in 1952, Vice-President of the International Federation of Scientists and was elected again in September 1962. In 1950 he was awarded the A. N. Bakh and I. I. Mechnikov Prizes.

Oparin's work is devoted to the biochemical basis of processing of vegetative raw materials, to the action of enzymes in a living vegetative organism, and to the origin of life on the earth. His work laid the basis for technical biochemistry in the U.S.S.R. The study by Oparin and his students gave a rational biochemical basis for the production of sugar, bread, tea, wine, and tobacco. Oparin advanced a hypothesis on the origin of life on earth based on investigations in the field of astronomy, chemistry, geology and biology.

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Life: Its Nature, Origin, and Development. Edinburgh: Oliver and Boyd Co., 1961. 224 p. (English trans.)

Biography:

Aleksandr Ivanovich Oparin. On 60th Anniversary since date of birth. Biokhimiya, 1954, 19, #2.

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ORLOV, YURII ALEKSANDROVICH (Paleontologist and
Histologist)

Yu. A. Orlov was born June 12, 1893. In 1917 he graduated from the Petrograd (Leningrad) University. He taught in Perm' University until 1924, and from 1924 to 1935 at the Military Medical Academy in Leningrad. Orlov was a professor at the Leningrad University 1933-1941 and in 1943 at the Moscow University. In 1929 he began working in the Paleontological Institute of the U.S.S.R. Academy of Sciences and in 1945 he became Director of this Institute. He was elected Corresponding Member of the U.S.S.R. Academy of Sciences in 1953 and in 1960 an Academician. In 1946 he was awarded the title of Honored Scientist of the R.S.F.S.R.

Orlov is the author of comparative-morphological investigations of the nervous system of invertebrates and on paleontology of invertebrates and vertebrates.

Bibliography:

Perunilnae, new subfamily of marten is from Neogene Eurasia. Moscow-Leningrad: 1947 (Works of the Paleontological Institute of the U.S.S.R. Academy of Sciences, 10, #3).

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PALLADIN, ALEKSANDER VLADIMIROVICH (Biochemist)

A. V. Palladin was born September 10, 1885. He graduated in 1908 from the University of Petersburg. In 1916 he was made professor at the Institute of Agriculture and Forestry in Kharkov and in 1921 professor at the Kharkov Medical Institute. He helped found the Ukrainian Biochemical Institute (since 1931, the Institute of Biochemistry of the Ukrainian S.S.R. Academy of Sciences) and in 1925 became the Director. Beginning in 1934, he was also a professor at the University of Kiev. He became a member of the Communist Party of the Soviet Union in 1932. Since 1929 he has been a Member of the Academy of Sciences of the Ukrainian S.S.R. From 1946 to 1962 he

was the President of this Academy of Sciences. In 1942 he became a Member of the U.S.S.R. Academy of Sciences. Palladin was named, in 1935, an Honored Scientist of the Ukrainian S.S.R. He has been a member of the U.S.S.R. Academy of Medical Sciences since 1944. In 1950 he was an Honored Member of the Belorussian S.S.R. Academy of Sciences. Also he is an Honorary Member of the Academies of Sciences of Bulgaria, Hungary, and Rumania and a foreign Member of the Polish Academy of Sciences. He has been a Deputy to the U.S.S.R. Supreme Soviet. The Supreme Soviet of the U.S.S.R. awarded him in 1955 the title of "Hero of Socialist Labor."

Palladin's work is in animal biochemistry. He was the first in the U.S.S.R. to study experimentally the biochemistry of vitamins and the intermediate chemical transformations in metabolism (intracellular carbohydrate and phosphorous exchange). In the study of vitamins, he investigated the processes of their transformation in the tissues of animals, and the disorder of metabolism during avitaminosis and hypovitaminosis. He produced a synthetic vitamin preparation "vikasol," which is utilized in medicine. His earlier work was devoted to the study of creatin. In the area of biochemistry of the muscle he investigated the role of creatin in the muscle and the questions of muscular activity and muscle training. In the area of biochemistry of the nervous system, Palladin and associates showed the biochemical difference of separate, functionally-dissimilar parts of the central nervous system; conducted comparative biochemical investigations on tissues of the nervous system in different types of animals; and studied the chemical composition of tissues of the nervous system in the process of embryonic development of animals. Palladin studied the biochemistry of the brain under various functional conditions, such as inhibition and excitation, and investigated proteins and enzymes of the nervous system.

Palladin is the author of Textbook on Biological Chemistry (1924, 12th ed., 1946). In 1926, he was instrumental in establishing the first Soviet biochemical journal, "Scientific Notes of the Biochemical Institute," later renamed (1934) the "Ukrainian Biochemical Journal." He is its editor at the present time.

As of 1961 Palladin was a Member of the Presidium of the U.S.S.R. Academy of Sciences.

Bibliography:

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Biography:

D. L. Ferdman. Scientific, pedagogical and social activity of the Member of the Academy of Sciences A. V. Palladin. Uspekhi Sovremennoi Biol. 1955, 40, #1.

M. F. Gulii. On the 70th Anniversary since the date of birth and the 50th Anniversary of scientific of hero of Socialist labor, Member of the Academy of Sciences A. V. Palladin. Vestnik Akad. Nauk Ukrain. S.S.R., 1955, #9.

A. M. Uterski. A. V. Palladin. 2nd ed., Kiev, 1961. Academy of Sciences of Ukrainian S.S.R.

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PATON, BORIS EVGEN'EVICH (Metallurgist)

B. E. Paton was born November 27, 1918. He graduated in 1941 from Kiev Polytechnical Institute. In 1942 he began work at the Ukrainian S.S.R. Academy of Sciences Institute of Electro-Welding and in 1953 was made Director. He has been a member of the Communist Party of the Soviet Union since 1952. He became a Corresponding Member of the Ukrainian S.S.R. Academy of Sciences in 1952 and in 1958 an Academician. In February 1962, he was elected President of the Ukrainian S.S.R. Academy of Sciences. As of June 1962 he is an Academician of the U.S.S.R. Academy of Sciences. In 1950 he received a State Prize and in 1957, a Lenin Prize.

Paton's work has been concerned with electro-technical problems of contact, arc, and gas-electric welding of metals. From 1942-1945, he investigated the basic methods of closed arc welding. In 1945-1951 he developed a theory for controlling automatic electric arc welding and methods for pipe welding (State Prize 1950). He also participated in developing new methods of electric-slag welding of massive pieces of metal (Lenin Prize 1957).

He was a deputy to the fifth session of the Ukrainian Supreme Soviet and the sixth session of the Supreme Soviet of the U.S.S.R. In 1961 he was elected to the Central Committee of the Communist Party.

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Electro-slag Rewelding of Metals. Moscow: 1961.

Production of Two-Layer Sheets for Electro-slag Welding. Moscow: 1962.

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PAVLOV, IGOR' MIKHAILOVICH (Metallurgist)

I. M. Pavlov, son of M. A. Pavlov (1863-1950, a Russian metallurgist) was born June 23, 1900. After graduating from

Petrograd Polytechnic Institute in 1923, he worked in Metallurgical plants. In 1928 he began teaching at and in 1934 was made professor at the Leningrad Polytechnic Institute. He became a professor in 1943 at the Moscow Institute of Steel. In 1953 he went to work at the Institute of Metallurgy of the U.S.S.R. Academy of Sciences. Since 1946 he has been a Corresponding Member of the U.S.S.R. Academy of Sciences.

Pavlov's main works deal with the theory of the rolling and with pressure processing of metals and also with the general problems of metallurgy and metals.

Bibliography:

Theory of Rolling. 3rd ed., Moscow: 1950.

Composition of a Furnace Charge for Non-Ferrous Casting. 2nd ed., Moscow-Leningrad: 1932.

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and Ya. S. Gallai. Forward Flow During Rolling. Moscow-Leningrad: 1936.

and others. Processing of Metals by Pressure. Moscow: 1955.

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PAVLOVSKY (PAVLOVSKII), EVGENII NIKANOROVICH
(Zoologist and Parasitologist)

E. N. Pavlovsky was born March 5, 1884. In 1909 he graduated from the Medical Military Academy and in 1921 became a professor there. From 1933 to 1944 he worked at the All-Union Institute of Experimental Medicine (Leningrad) and at the same time (until 1951) in the Tadzhik branch of the U.S.S.R. Academy of Sciences. He was made Director in 1942 of the Zoological Institute of the U.S.S.R. Academy of Sciences and Chairman, in 1946, of the Department of Parasitology and Medical Zoology at the Institute of Epidemiology and Microbiology of the U.S.S.R. Academy of Medical Sciences. Pavlovsky has been a member of the Communist Party of the Soviet Union since 1940. He is a lieutenant-general in the medical service.

In 1939 he became an Academician of the U.S.S.R. Academy of Sciences, in 1944 a member of the U.S.S.R. Academy of Medical Sciences, and in 1951 an honorary member of the Tadzhik S.S.R. Academy of Sciences. The U.S.S.R. Geographic Society elected him President in 1952. Pavlovsky has been made an honorary member of many Russian and other scientific societies including: the Royal Society of Tropical Medicine and Hygiene, Societe Pathologie exotique, Societe France de Zoologie, Parasitological Society of USA, the Iranian Academy (Teheran), Leopoldina Academy, the Academy of Zoology. He has received honorary doctorate degrees from the Sorbonne University (Paris) and the University in Delhi (India). He is a Deputy of the U.S.S.R. Supreme Soviet, second through fourth convocations. In 1935 he was an Honored Scientist of the R.S.F.S.R. Pavlovsky received a Stalin Prize in 1941 and again in 1950. The U.S.S.R. Academy of Sciences awarded him the gold medal of I. I. Mechnikov in 1949, and in 1954 the U.S.S.R. Geographic Society awarded him a gold medal.

As of 1961, Pavlovsky was Chairman of the Commission on Ichthyology of the U.S.S.R. Academy of Sciences. He is also President of the All-Union Entomological Society, Academy of Sciences U.S.S.R. In 1962, Pavlovsky asked to be relieved of the directorship of the Zoological Institute of the U.S.S.R. Academy of Sciences and was appointed the Senior Scientific Consultant of this Institute.

Pavlovsky's main work is in parasitology. He organized and conducted many complex expeditions to Middle Asia, to Zakavkaz'ye, to the Crimea, the Far East and other regions of the country in order to study endemic parasitic and communicable diseases (tick fever, tick encephalitis, mosquito fever, leishmaniosis). Pavlovsky, his students, and associates collected voluminous materials on the fauna, biology and ecology of parasites and carriers of sickness. They studied natural reservoirs of pathogenic organisms and the routes of their circulation in nature and in the organisms of humans and domestic animals. He investigated natural breeding grounds for communicable diseases of man and helped to organize prophylactic measures. He investigated intestinal protozoan and worm infestation, flying, bloodsucking insects (gnus) and protective measures against these insects (protective nets of Pavlovsky), and eradication of bloodsuckers in their breeding ground and habitats. Pavlovsky also studied poisonous animals and the properties of their poison ("Poisonous Animals and their Meaning for Man," 1923, and "Poisonous Animals and their Venoms," 1927).

He is the author of a series of textbooks and manuals on parasitology and of studies on the natural sources of diseases.

Bibliography:

Course on the Parasitology of Man (Works on Carriers of Infection and Invasion), 2nd ed. Leningrad: Moscow: 1934. Short Textbook on the Biology of Man's Parasites. Moscow-Leningrad: 1941.

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Biography:

Evgenii Nikanorovich Pavlovsky, 2nd ed. Moscow: 1956.

To the Seventieth Anniversary Since the Date of Birth of E. N. Pavlovsky. Medical Parasitology and Parasitic Diseases, 1954, #2. J. N. Pawlowski, Leben und Werk. Berlin, 1959.

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PETROV, ALEKSANDR DMITRIEVICH (Organic Chemist)

A. D. Petrov was born August 28, 1895. He graduated in 1922 from Petrograd University. In 1943 he became a professor at the Moscow Chemico-Technological Institute. Since 1946 he has been a Corresponding Member of the U.S.S.R. Academy of Sciences. In 1947 he was awarded a Stalin Prize.

Petrov's work is in organic synthesis. He conducted syntheses of pure hydrocarbons in motor fuel and established the manner in which the composition and structure of these hydrocarbons are related to their properties. He conducted syntheses and investigated properties of silicon hydrocarbons.

Bibliography:

Means of developing organic synthesis. Industry of Organic Synthesis of the Aliphatic Series Compounds. Moscow-Leningrad: 1943.

Chemistry of Motor Fuels. Moscow: 1953.

Office: Chemistry Department
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PETROV, ALEKSANDR PETROVICH (Railroad Transportation Engineer)

A. P. Petrov was born September 1, 1910. He graduated in 1934 from the Moscow Institute of Transportation Engineers. From 1935 to 1940 he worked at the Scientific Research Institute of Railroad Transportation. In 1936 he formed the teaching staff of the Moscow Institute of Transportation Engineers. He worked in the Ministry of Transportation in 1941-1946 and in 1949 began working at the All Union Scientific Research Institute of Railroad Transportation. He has been a member of the Communist Party of the Soviet Union from 1945. In 1953 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences.

The work of Petrov is in national use of railroads, particularly the organization of the car turnover. He worked out a method of calculating plans for formation of trains. He formulated a theory of schedules, and traffic carrying capacity of railroads.

Bibliography:

Plan on Formation of Trains. Experiment, Theory, Methodology of Calculation. Moscow: 1950.

Investigation of a Two-Track Schedule in Connection with the Scheduling of Passenger Trains. Moscow: 1941.

Organization of Traffic in Railroad Transport. Moscow: 1952.

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PETROV, BORIS NIKOLAEVICH (Automation Specialist)

B. N. Petrov was born March 11, 1913. In 1939 he graduated from Moscow Institute of Energetics and began working at the Institute of Automation and Remote Control of the U.S.S.R. Academy of Sciences. He has taught at Moscow Aviation Institute, starting in 1944, and in 1948 became a professor. He was elected a Corresponding Member of the U.S.S.R. Academy of Sciences in 1953, and in 1960 an Academician.

Petrov's investigations are in automation and in approximate integration of differential equations.

Bibliography:

and others. Automatic Control of Linear Dimensions of Objects. Moscow: 1947.

On construction and transformation of structural schemes.

Izvest. Akad. Nauk S.S.S.R., Otdel. Tekh. Nauk, 1945, #12.

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PETROV, GEORGII IVANOVICH (Engineer in Hydro-
Aeromechanics and Gas Dynamics)

G. I. Petrov was born May 31, 1912. After graduation from Moscow University in 1935 he worked in scientific research institutes. In 1953 he became a professor at Moscow University. He was elected a Corresponding Member of the U.S.S.R. Academy of Sciences in 1953, and in 1958 an Academician. In 1949 he received a Stalin Prize.

The earlier works of Petrov were concerned with the question of stability of vortex layers, the propagation of oscillations in a viscous liquid, elucidation of physical conditions in the destruction of laminar flow. He proved the convergence of Galerkin's method for seeking the characteristic value in a wide class of equations, including non-conservative systems (particularly equations of oscillations in a viscous liquid).

Bibliography:

On the Propagation of Oscillations in a Viscous Liquid and the Appearance of Turbulence. Moscow: 1938.

Utilization of Galerkin's method in the problem of the stability of flow of a viscous liquid. Priklad. Mat. i Mekh., 1940, 4, #3.

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PETROV, NIKOLAI NIKOLAEVICH (Surgeon-oncologist)

N. N. Petrov was born December 14, 1876. He graduated in 1899 from the Military Medical Academy in Petersburg (Leningrad). In 1913 he became professor at the Institute of Advanced Training of Doctors in Petersburg. He founded the Oncology Institute in Leningrad in 1926 and was a scientific leader in this Institute. He was elected a Corresponding Member of the

U.S.S.R. Academy of Sciences in 1939 and in 1944 a Member of the U.S.S.R. Academy of Medical Sciences. In 1935 Petrov was an Honored Scientist of the R.S.F.S.R., and in 1942 recipient of Stalin Prize. The Academy of Sciences of the U.S.S.R. awarded him the I. I. Mechnikov Prize in 1953 for his work on the experimental rendering of malignant tumors in monkeys. In 1957 he was a Hero of Socialist Labor.

Petrov's works are on questions of origin, prophylaxis and treatment of malignant tumors, and surgery of stomach and duodenal ulcers.

Petrov is a Member of the Institute of Experimental Pathology and Therapy, Sukhumi, U.S.S.R. Academy of Medical Sciences.

Bibliography:

Editorship of Petrov and others. Stomach Duodenum Ulcers and Surgical Treatment. 1941.

Editorship of Petrov and others. Malignant Tumors. 2 vols. 1932-34.

Editorship of Petrov and others. Malignant Tumors. 3 vols. 1947-52.

Editorship of Petrov and others. Treatment of War Injuries. 1939, 7th edition, 1945.

Biography:

A. I. Serebrov, S. A. Kholdin, A. S. Chechulin. Nikolai Nikolaevich Petrov (On the 50th Anniversary of Scientific, Pedagogical Medical and Social Activity). Questions on Oncology, #3, Moscow, 1951 (contains bibliography of the scientific works of Petrov).

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PETROVSKII, IVAN GEORGIEVICH (Mathematician)

I. G. Petrovskii was born January 18, 1901. In 1927 he graduated from Moscow University. He became a professor there in 1933, and in 1951 he was appointed Rector of the University. In 1943, Petrovskii was elected a Corresponding Member of the U.S.S.R. Academy of Sciences and, in 1946, an Academician. He was awarded, in 1946 and in 1952, Stalin

Prizes. He is a member of the Soviet Committee on Defense of Peace.

The work of Petrovskii is concerned with the theory of partial differential equations, algebraic geometry, qualitative theory of differential equations, and theory of probability. He studied the various classes of elliptical systems (1937), studied problems with initial conditions for parabolic and hyperbolic systems of equations (1936); investigated the dependence of solutions on initial conditions; indicated for hyperbolic equations with constant coefficients the necessary and adequate conditions of existence of lacunae, that is, those regions in the base of the characteristic cone, the initial conditions of which do not influence the significance of the solution at the cone vortex (1944). For his studies on the theory of partial differential equations Petrovskii was awarded, in 1946, a Stalin Prize. Petrovskii has also solved the first boundary-value problem for the equation of heat conductivity using the most general assumptions concerning the boundary of the domain (1935), gave the solution of the Dirichlet problem for the Laplace equation by the method of finite differences in an n -measured domain (1941), studied the behavior of integral curves for the system of ordinary differential equations in the vicinity of a singular point (1934), and obtained a series of results in the theory of probability. In the area of algebraic geometry, Petrovskii studied the distribution of ovals of the algebraic curve of the sixth order (1935). The method allowed solution of a more general problem which gives the distribution of ovals of an algebraic curve of any order, and establishes the topological properties of algebraic surfaces and algebraic manifolds of any number of dimensions (1949). Petrovskii, together with E. M. Landis, obtained (1955-57) evaluations of the number of limiting cycles in the ordinary differential equations, the right part of which is a ratio of two polynomials of the n^{th} power; in the case where $n = 2$, their evaluation is exact. He is the author of textbooks, *Lectures on the Theory of Ordinary Differential Equations* (1939), *Lectures on the Theory of Integral Equations* (1948), *Lectures on Equations with Partial Derivatives* (1950), which were published many times in the U.S.S.R. and translated to foreign languages (Stalin Prize 1952).

In 1961 Petrovskii was awarded the Order of Lenin. In March 1962, he was elected delegate from R.S.F.S.R. to the Supreme Soviet.

As of 1961, Petrovskii was a Member of the Presidium of the U.S.S.R. Academy of Sciences.

Bibliography:

Über das Cauchysche Problem für Systeme von partiellen Differentialgleichungen. Mathematical Collection. New Series, 1937, 2 (44), #5.

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Bibliography:

S. D. Sobolev. On the 50th Anniversary of Ivan Georgievich Petrovskii. Izvest. Akad. Nauk S.S.S.R., Ser. Mat., 1951, 15, #3.

A. N. Kolmogorov. Ivan Georgievich Petrovskii. On the 50th Anniversary since the date of birth. Uspekhi Mat. Nauk, 1951, #3 (43) (contains bibliography of the works of Petrovskii).

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PETRYANOV-SOKOLOV, IGOR' VASIL'EVICH (Physical Chemist)

I. V. Petryanov-Sokolov was born June 18, 1907. After graduating from Moscow University in 1930, he worked at the Karpov Physico-Chemical Institute. In 1947 he became professor at the Moscow Chemico-Technological Institute. He has been a Corresponding Member of the U.S.S.R. Academy of Sciences since 1953. In 1941 he received a Stalin Prize.

The main works of Petryanov-Sokolov deal with the study of aerosols with a liquid dispersed phase, i.e., fog. He developed new methods of investigating them and studied the appearance of charges in them and the influence of charges on their stability.

Bibliography:

and N. Fuks. Determining the size and charge of particles in fog. Zhur. Fiz. Khim., 1933, 4, #5.

and N. M. Tunitskii. Formation of Aerosols During Condensation of Supersaturated Vapors. Zhur. Fiz. Khim., 1939, 13, #8.

and N. Rozenbyum. Edge angles of small drops. Doklady Akad. Nauk S.S.S.R., 1948, 61, #4.

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PEYVE, ALEKSANDR VOL'DEMAROVICH (Geologist)

A. V. Peyve was born February 9, 1909. After graduating from Moscow Geological Survey Institute in 1930, he worked in the Scientific Institute on Fertilizers. In 1934-1935, he took part in the Tadzhik-Pamir Expedition of the U.S.S.R. Academy of Sciences. He began working at the Geological Institute of the U.S.S.R. Academy of Sciences in 1935 and in 1952 became deputy Director. In 1961 Peyve was named director. He has been a member of the Communist Party of the Soviet Union since 1953. In 1958 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences. He was awarded a Stalin Prize in 1946.

Peyve's main work is in regional tectonics, and also stratigraphy of magmas and metalogenesis. He has conducted investigations of various types of faults in the earth's crust, particularly deep faults. He is the author of works on the asymmetry of abyssal structures and on the conditions for the formation and development of geosynclines. The name of Peyve is associated with the discovery of a series of deposits of bauxite, phosphorite, and potassium salts. He took part in the compilation of a tectonic map of the U.S.S.R. on the scale of 1/5,000,000 (1956).

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Scheme of Tectonics of Western Tien Shan. Izvest. Akad. Nauk S.S.S.R., Otdel Mat. i Estest. Nauk, 1938, #5-6.

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Tectonics of the North Urals Bauxite Belt. Moscow: 1947.

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PEYVE, YAN VOL'DEMAROVICH (Agricultural Chemist)

Y. V. Peyve was born August 3, 1906. He graduated in 1929 from the Moscow Agricultural Academy of K. A. Timiryazev. In 1930-1944, he worked in the All-Union Scientific Research Institute of Flax; in 1944-1950 he was President of the Latvian Agricultural Academy. Peyve has been a doctor of sciences and a professor of agrochemistry since 1940. He has been an Academician of the Latvian S.S.R. Academy of Sciences from 1946 and in 1951 was made President. In 1953 he was elected Corresponding Member of the U.S.S.R. Academy of Sciences. Peyve has been a Deputy to the U.S.S.R. Supreme Soviet, fourth, fifth, and sixth convocations. In 1949 he became a member of the Soviet Committee in Defense of Peace, and in 1951 Chairman of the Latvian Republican Committee on the Defense of Peace. He was elected in 1958, Chairman of the Council of the Nationalities of the U.S.S.R. Supreme Soviet.

Peyve's main work is in agrochemistry, biochemistry, soil science, and increasing harvest of industrial crops such as flax and sugar beets. He established methods of determining mobile forms of potassium, aluminum, humous acids, and microelements in soils of the Podzol zone and invented apparatus for making these analyses under production laboratory conditions on collective farms. He worked out principles of differential use of fertilizer for flax and other agricultural crops in relation to soil conditions. Peyve also studied use of microelements such as boron, molybdenum, zinc, and copper and plant nutrition and cobalt, copper, zinc, molybdenum and boron in the soils of the Latvian S.S.R. and U.S.S.R.

In 1961 Y. V. Peyve published a monograph "Biochemistry of the Soils" in which he presents experimental works dealing with biochemistry of soil humus, biochemistry of microelements and other elements of plant nutrition as well as biochemistry of enzymes.

In 1961 he was a Candidate Member of the Central Committee of the Communist Party.

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PILYUGIN, NIKOLAI ALEKSEEVICH (Automation Specialist)

N. A. Pilyugin was born in 1908. In 1935 he graduated from the Moscow Higher Technical School, and subsequently worked in various scientific-research organizations. He has been a member of the Communist Party of the Soviet Union since 1940. In 1960 he was elected to the U.S.S.R. Academy of Sciences as a Corresponding Member.

Pilyugin's principal works deal with problems of automatic controls.

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PISTOL'KORS, ALEKSANDR ALEKSANDROVICH (Radio Engineer)

A. A. Pistol'kors was born October 10, 1896. He became acquainted with radio engineering in World War I in the Officers Electrochemical School in Petersburg and on the Caucasus front while working at a radio station. He entered the Moscow

Technical College in 1923 and in 1927 graduated. In 1926-1928 he worked in the Nizhnii-Novgorod Radio Laboratory, and in 1929-1942 at the Central Radio Laboratory in Leningrad. In 1931 to 1945 Pistol'kors also taught at the Leningrad Electro-Technical Institute and at the Leningrad Institute of Engineers of Communication. He was professor from 1945 to 1950 at the Moscow Institute of Communication Engineers. Since 1946 he has been a Corresponding Member of the U.S.S.R. Academy of Sciences. In 1956 for his work in radio technics, he was awarded the A. S. Popov Gold Medal.

The scientific work of Pistol'kors is in the theory of antennae and feeder lines, the calculation of resistance of radiation in complex antennae, the theory of two-wire non-symmetrical lines, the calculation of antennae according to a given directional diagram, and the theory of slot antennae. He proposed a number of new type antennae, including a bent vibrator which is utilized in television reception antennae.

Bibliography:

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Application of the functions of Mathieu for calculating the distribution of the field in the antenna according to a given directional diagram. Doklady Akad. Nauk S.S.S.R., 1953, 89, #5.

Biography:

Laureate of the Gold Medal of A. S. Popov. Radiotechnics, 1956, 11, #6.

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PIYP, BORIS IVANOVICH (Volcanologist)

B. I. Piyp was born November 6, 1906. After graduating from the Leningrad Mining Institute in 1931, he conducted field studies on the Kamchatka peninsula and the Urals. He began working in the Laboratory of Volcanology of the U.S.S.R. Academy of Sciences in 1940, and in 1940-46 and 1950-54 was Chief of the Kamchatka Volcanological Station. Since 1945 Piyp has been a member of the Communist Party of the Soviet Union. In 1958 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences. For his monograph on the volcanoes of the Klyuchevskaya group in 1956, he was awarded the Prize of the Presidium of the U.S.S.R. Academy of Sciences. He has also received the Order of the Red Star and medals.

Piyp studied the volcanoes, hot springs and geologic structure of Kamchatka. He investigated in detail a number of eruptions of volcanoes of various types.

As of 1961, Piyp was a Member of the Presidium of the Siberian Branch U.S.S.R. Academy of Sciences, and Director of the Kamchatka Joint Expedition.

In 1962 he was appointed Director of the Siberian Branch Institute of Volcanology.

Bibliography:

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PLAKSIN, IGOR' NIKOLAEVICH (Metallurgist and Mining Engineer)

I. N. Plaksin was born October 8, 1900. He graduated in 1926 from the Far East University. In 1930 he became a professor at the Moscow Institute of Nonferrous Metals and Gold. He began working, in 1944, also at the Mining Institute of the U.S.S.R. Academy of Sciences. He has been a member of the Communist Party of Soviet Union since 1945. In 1946 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences. He was awarded Stalin Prizes in 1951 and in 1952.

Plaksin has worked in hydrometallurgy and on the concentration of commercial minerals. He studied the influence of forms in which minerals are found in ores on their concentration and has used microradiography and radiometry.

Bibliography:

Interaction of Alloys and Natural Gold with Mercury and with Cyanide Solutions. Moscow-Leningrad: 1937.

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and D. M. Yukhtanov. Hydrometallurgy. Moscow: 1949.

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PLAUDE, KARL KARLOVICH (Thermal Engineer)

K. K. Plaude was born March 26, 1897. Upon graduating from the Leningrad Institute of Civil Engineering in 1926, he worked at the "Gidravlika" plant until 1936. From 1928-34, he lectured at the Leningrad Institute of Civil Engineering, and from 1932 to 1938, at the Leningrad Institute of Industrial Construction Engineers. From 1937 to 1941, he worked at "Lengosproektstroi" and during 1942-44 was chief of the Construction Directorate in Moscow. From 1941 to 1953, he was lecturer at the University of Latvia, and in 1950 was Director of the Latvian S.S.R. Academy of Sciences Institute of Energetics and Electrotechnics. He is a holder of the title Honored Scientist of the Latvian S.S.R., awarded in 1955. Since 1946 he has been a member of the Communist Party of the Soviet Union. He became Academician of the Latvian S.S.R. Academy of Sciences in 1951. From 1958 to 1960 he was Vice-President, and since 1960 has been President of the Latvian S.S.R. Academy of Sciences. In 1960 he was elected Corresponding Member of the U.S.S.R. Academy of Sciences. He is a Deputy of the Supreme Soviet of the U.S.S.R. In March, 1962, he was elected to the Council of Nationalities.

Professor Plaude's main work lies in the field of heat supply. He has studied heat exchange for heat plants using a high temperature heat carrier. Plaude developed a two-step system of heat supply, electricity systems, and automatic thermostats for local regulation of radiators. He has elaborated principles of automation of heat supply. He is the author of many scientific works in the field of the thermal engineering.

Bibliography:

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POGORELOV, ALEKSEI VASIL'EVICH (Mathematician)

A. V. Pogorelov was born in 1919. In 1945 he completed his studies at the Zhukovskii Air Force Academy. From 1947 to 1959, he was chief of the geometry section and Chairman of the Geometry Department of the Khar'kov State University. In 1959 he became head of the geometry section of the Ukrainian S.S.R. Academy of Sciences Institute of Mathematics, and the Ukrainian S.S.R. Academy of Sciences Institute of Physico-Technology. He is a Corresponding Member of the Ukrainian S.S.R. Academy of Sciences, and in 1960, was elected a Corresponding Member of the U.S.S.R. Academy of Sciences. In 1950 he was awarded a Stalin Prize.

Pogorelov's works are primarily concerned with problems of solid geometry.

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POMERANCHUK, ISAAK YAKOVLEVICH (Physicist)

I. Ya. Pomeranchuk was born May 20, 1913. He graduated from the Leningrad Polytechnic Institute in 1936 and then worked in departments of the U.S.S.R. Academy of Sciences. In 1946 he became professor at Moscow Physical Engineering-Physical Institute. Since 1953 he has been a Corresponding Member of the U.S.S.R. Academy of Sciences. He is a recipient of a Stalin Prize.

The works of Pomeranchuk deal with theoretical physics of low temperatures, theory of radiation, nuclear physics, and cosmic rays. He obtained important results in the theory of heat conductivity of dielectrics and the theory of neutron scattering in crystals. Pomeranchuk in 1939 showed that the radiation of electrons in the earth's magnetic field limited the possible energy of the electrons of cosmic rays reaching the atmosphere. He also worked on the theory of collisions and radiation at high energies.

Bibliography:

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On the theory of liquid He³. Zhur. Eksptl. i Teoret. Fiz., 1950, #10.

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PONTEKORVO, BRUNO MAKSIMOVICH (Physicist)

B. M. Pontekorvo was born August 22, 1913. After graduating in 1933 from the University of Rome, he taught there. In 1936-1940 he worked in scientific organizations in France, 1940-1948 in the United States, and in 1948-50 at the Harwell Laboratories in England. Since 1950 he has been working in the U.S.S.R. In 1955 he became a member of the Communist Party of the Soviet Union. He was elected in 1958 a Corresponding Member of the U.S.S.R. Academy of Sciences.

Pontekorvo showed, in 1936-39 while studying nuclear isomerism, that isomeric transitions have a large internal conversion ratio. He obtained a beta-stable isomer by neutron irradiation of cadmium. Exciting nuclei by X-ray radiation, he discovered the phenomena of "nuclear phosphorescence". He proposed in 1943 neutron logging. In 1948, while measuring the beta spectrum of tritium, Pontekorvo showed that the mass of neutrino does not exceed 1/500 electron mass. He was the first to observe L-capture. While studying decay of ν -mesons, he ascertained that during this process there was no emission of gamma rays, but the product of the decay was the electron. Pontekorvo pointed out the analogy between the processes of the capture of the ν -meson with a K-shell and the usual K-capture of the electron. After 1950 Pontekorvo investigated the production of π^0 -mesons by neutrons. He predicted in 1951 production of heavy mesons with hyperons. From 1955 he studied the interaction of π -mesons with nucleons.

Bibliography:

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and Mukhin. Scattering of π^+ -mesons on Hydrogen. II.

Zhur. Eksptl. i Teoret. Fiz., 1956, 31, #4.

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PONTRYAGIN, LEV SEMYONOVICH (Mathematician)

L. S. Pontryagin was born September 3, 1908 in Moscow. At the age of 14 he lost his sight in an accident. In 1929 he graduated from Moscow University and in 1935 became a professor. He was elected a Corresponding Member of the U.S.S.R. Academy of Sciences in 1939 and in 1958 an Academician. In 1941 he was awarded a Stalin Prize.

Pontryagin's main works are concerned with topology and the theory of continuous groups. In 1932 he formulated the general theory of duality, which fully solved the problem of determination of the Betty groups of an arbitrarily open set of Euclidian space through the Betty groups of an additional closed set. In connection with the proof of the theorem of duality, Pontryagin set up a general theory of the character of commutative groups. This theory, and the theorems on the structure of rather wide types of topological groups completely reconstructed so-called topological algebra. The results obtained by Pontryagin on the theory of topological groups are set forth in the monograph "Continuous Groups" (1938), (Stalin Prize 1941). Pontryagin also has worked in algebra, theory of the Lie groups, and differential geometry.

Bibliography:

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POPKOV, VALERII IVANOVICH (Electrical Engineer)

V. I. Popkov was born February 3, 1908. He graduated in 1930 from the Moscow Institute of Energetics. In 1932-36, he worked at the All-Union Electro-Technical Institute. He began working in 1943 at the Institute of Energetics of the U.S.S.R. Academy of Sciences. Popkov has been a member of the Communist Party of the Soviet Union since 1951. In 1953 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences.

Popkov's main work is in high-voltage technology and electric discharge in gases at high voltage, physical processes in electric filters, and long-distance electric transmission.

Bibliography:

Theory of a bi-polar corona on conductors. *Doklady Akad. Nauk S.S.S.R.*, 1947, 58, #5.

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Biography:

Corresponding Member of the U.S.S.R. Academy of Sciences, V. I. Popkov. On the 50th Anniversary since the date of birth and the 25th Anniversary of scientific activity. *Electricity*, 1958, #4, 94.

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POPOV, YEVGENII PAVLOVICH (Automation Specialist)

Ye. P. Popov was born in 1914. In 1939, upon completion of the Bauman Moscow Advanced Technical School, he served in the Soviet Army until 1943 when he began to work at the A. F. Mozhaiskii Air Force Engineering Academy in Leningrad where, in 1949, he became chairman of the Department of Automation and Remote Control. At the same time he was working as a senior scientific worker at the U.S.S.R. Academy of Sciences Institute of Electromechanics. He was awarded the degree of Doctor of Technical Sciences in 1947 and the rank of professor in 1948. Since 1942 he has been a member of the Communist Party of the Soviet Union. He was elected, in 1960, a Corresponding Member of the U.S.S.R. Academy of Sciences. In 1949 he was awarded a Stalin Prize.

Popov's works are primarily concerned with the theory of automatic controls.

Bibliography:

On the approximate study of self and forced oscillations on nonlinear systems. *Doklady Akad. Nauk S.S.S.R.* 95, 5, 943-946 (1954). *Applied Mechanics Reviews* 9, 654 (1956).

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PREDVODITELEV, A. S. (Physicist)

A. S. Predvoditelev was born August 30, 1891. He graduated from Moscow University in 1915 and has been a professor there since 1930. In 1938 he became Laboratory Chief at the U.S.S.R. Academy of Sciences Institute of Energetics. He was

elected to the U.S.S.R. Academy of Sciences as a Corresponding Member in 1939. In 1950 he was awarded a State Prize.

Predvoditelev's principal works have been in the field of molecular physics, hydrodynamics and thermal physics dealing with investigations in combustion processes, wave distribution in liquid and gas media, and with problems of gas dynamics of reactant media and physical properties of liquid. He developed a theory of heterogenous combustions which establishes a relationship between the chemical and physical processes facilitating carbon combustion.

Bibliography:

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PROKHOROV, ALEKSANDR MIKHAILOVICH (Radio Physicist)

A. M. Prokhorov was born in 1916. He graduated from Leningrad State University in 1939. In 1959, he became a professor. In 1941-1944, he served in the Soviet Army. From 1946 to 1954 he was the Senior Scientific Worker at the U.S.S.R. Academy of Sciences Lebedev Institute of Physics, and in 1954 he was made Chief of the Oscillation Laboratory of this institute. He received a Lenin Prize in 1959. Prokhorov has been a member of the Communist Party of the Soviet Union since 1960. He was elected, in 1960, a Corresponding Member of the U.S.S.R. Academy of Sciences.

In September 1959, Prokhorov visited the United States to attend the International Conference on Quantum Electronics Phenomena in Bloomingberg, New York, and in 1962, the annual meeting of the Optical Society of America in Washington.

Prokhorov designed a molecular generator and amplifier.

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B. V. Ptitsyn was born in 1903. In 1929 he graduated from Leningrad State University. He worked as an assistant, docent, and from 1940 to 1956 he was Chairman of the Chemistry Department at the Naval Medical Academy in Leningrad. He was awarded a Doctor of Chemical Sciences degree in 1945. In 1956-1959, he was Chairman of the Department of General and Analytical Chemistry at the Leningrad Technological Institute of Food Industries. In 1959, he became Chairman of the Department of Complex Compounds at the U.S.S.R. Academy of Sciences Siberian Branch Institute of Inorganic Chemistry, and Chairman of the Department of General Chemistry at the Novosibirsk State University. He was elected to the U.S.S.R. Academy of Sciences as a Corresponding Member in 1960.

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PUSTOVALOV, LEONID VASIL'EVICH (Petrographer)

L. V. Pustovalov was born August 8, 1902. He graduated from Moscow University in 1925. In 1934, he was professor at the Moscow Oil Institute and from 1943-1955 he was chairman of the Department of Petrography of Sedimentary Rock of the Institute of Geological Sciences at the U.S.S.R. Academy of Sciences. He was also chairman of the Council on the Study of Productive Forces of the U.S.S.R. Academy of Sciences in 1953. He was elected, in 1953, to the U.S.S.R. Academy of Sciences as a Corresponding Member. Since 1944, he has been a member of the Communist Party. He was awarded Stalin Prizes in 1940 and 1941, and in July 1962 the Order of the Red Banner of Labor.

Pustovalov's main works deal with petrography and geochemistry of sedimentary rock. In 1933 he studied the problem of the geochemical species in sedimentary rock, having particular significance in understanding sedimentation processes. In particular, he demonstrated the differentiation in substances from a sedimentation zone, the periodicity in the formation of sedimentary rock and commercial minerals of sedimentary derivation. While studying conditions in the formation of oil producing rock masses of Azerbaijan, Pustovalov established a link between the mechanical, the mineralogical and the chemical composition of sedimentary rock (1946). In later years he has been occupied with the study of secondary changes of ancient sediments.

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RABINOVICH, ISAAK MOISEEVICH (Structural Engineer)

I. M. Rabinovich was born January 23, 1886. He graduated from the Moscow Technical College in 1918. From 1918 to 1932, he worked at the Institute of Engineering Research for the Scientific Technical Committee of the People's Commissariat in Roads and Communication. He also taught in a number of universities and technical colleges of Moscow. In 1932 he became a professor at the Military Engineering Academy, and in 1933, at the Engineer Construction Institute. In 1944 he was awarded the title Honored Scientist of the R.S.F.S.R. He has held the rank of Major General in the Technical Engineering Service, and was elected to the U.S.S.R. Academy of Sciences as a Corresponding Member in 1946. He is a Corresponding Member of the Academy of Construction and Architecture, U.S.S.R.

Rabinovich worked out a kinetic method in structural mechanics, originated effective methods for calculating complex, and investigated statically indeterminate systems, theory of guy trusses, and the dynamics of constructions. He led the first systematic experimental investigations in the U.S.S.R. of the dynamic action of different loads on the span of bridges and on other engineering constructions. The results of multiple investigations of Rabinovich are generalized in his Course in Structural Mechanics of Rod Systems (two parts, 1938-40).

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RABOTNOV, YURII NIKOLAEVICH (Mechanics Physicist)

Yu. N. Rabotnov was born February 24, 1914. In 1935 he graduated from Moscow University. He taught at the Moscow Institute of Energetics from 1935 to 1946. In 1946 he was made Chief of the Laboratory of Strength of Materials of the Institute of Mechanics of the U.S.S.R. Academy of Sciences. Rabotnov became professor at Moscow University in 1947. Since 1951 he has been a member of the Communist Party of the Soviet Union. In 1953 he was elected Corresponding Member of the U.S.S.R. Academy of Sciences and in 1958, Academician.

Rabotnov's investigations are in the theory of envelopes, the theory of creep, and the theory of plasticity.

In April 1958, Rabotnov visited the United States to attend the Mechanics Organization.

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RAKITIN, YURII VLADIMIROVICH (Plant Physiologist)

As of 1959 Yu. V. Rakitin has been working at the K. A. Timiryazev Institute of Plant Physiology. In June 1962 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences.

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RASPLETIN, ALEKSANDR ANDREEVICH (Radio Engineer)

A. A. Raspletin was born in 1908. He graduated from the Leningrad Electrotechnical Institute in 1936, and has worked in a number of scientific research organizations. He received a Stalin Prize in 1951, has been a member of the Communist Party of the Soviet Union since 1954, and was elected to the U.S.S.R. Academy of Sciences as a Corresponding Member in 1958.

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RAZUVAEV, GRIGORII ALEKSEEVICH (Organic Chemist)

G. A. Razuvaev was born August 24, 1895. In 1925 he graduated from Leningrad University. He worked at the Laboratory of High Pressures of the U.S.S.R. Academy of Sciences in 1924-29, and in 1929-34 was the Chief of the Laboratory. He also taught, in 1925-27, at the Military Technical Academy of the Workers' and Peasants' Red Army. Razuvaev began teaching at Gorkii University in 1946; in 1956 he became the Director of the Scientific Research Institute of Chemistry at this University. In 1958 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences. For his works in the chemistry of free radicals in solutions, in 1958 he was awarded a Lenin Prize.

Razuvaev studied free radicals of the phenarsazine series, the displacement of mercury, tin, lead, arsenic, antimony from metallo-organic compounds by hydrogen under high pressure. He also studied chain reactions of free radicals in a liquid medium. He investigated photoreactions of series of mercury-organic compounds and discovered the chain reactions in solutions of mercuric salts of organic acids which are initiated by free radicals. He worked out a method of identifying radicals according to products of their interaction with a solvent. Razuvaev also investigated the mechanism of decomposition of organic peroxides in solutions. Candidate dissertation (1946): "Meriquinoid phenarsazine derivatives." Doctor dissertation (1946): "Free radicals in reactions of metallo-organic compounds."

In February 1960, Razuvaev visited the United States to attend Amexco Group meetings in Washington, D. C.

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REBINDER, PYOTR ALIKSANDROVICH (Physical Chemist)

P. A. Rebinder was born October 2, 1898. In 1924 he graduated from Moscow University. He became, in 1923, a scientific worker at the Institute of Physics and Biophysics of the U.S.S.R. Academy of Sciences. In 1929 he was made professor at the K. Liebknecht Pedagogical Institute in Moscow. He was appointed, in 1934, Chief of the Department of Dispersed Systems at the Institute of Physical Chemistry of the U.S.S.R. Academy of Sciences. In 1942 he became professor at Moscow University. Rebinder was elected Corresponding Member in 1933 and in 1946 Academician of the U.S.S.R. Academy of Sciences. In 1942 he won a Stalin Prize.

Rebinder's investigations deal with surface adsorption layers on solid-liquid boundaries and their influence on the properties of dispersed systems. This work has had considerable

significance for the development of the theory of flotation of minerals. He has also studied the processes of dispersion and formation of a new crystalline phase and applied these to thixotropy, and to setting and hardening of cements, to the stabilization of foams, emulsions and suspensions, and to phase changes in emulsions. He investigated the mechanical properties of rheological systems and established the effect of small additions of adsorbing substances. Rebinder has indicated deformations can be eased and the mechanical stability of solids (in particular metals) can be lowered by adsorbing substances. This phenomenon is of particular significance for creep and fatigue breakdown of solids. This work of Rebinder has found application in a number of technological processes such as boring in solid rocks, grinding of the hard materials, and pressure processing and cutting of metals.

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A. B. Taubman. Laureate of the Stalin Prize Corresponding Member of the U.S.S.R. Academy of Sciences P. A. Rebinder. Uspekhi Khim., 1943, 12, #1.

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RENGARTEN, VLADIMIR PAVLOVICH (Geologist)

V. P. Rengarten was born July 24, 1882. Upon graduation from the Mining Institute of Petersburg in 1908, he began to work for the Geological Committee (later known as the All-Union Scientific Research Geologic Institute). He has been working in the U.S.S.R. Academy of Sciences since 1941. He received a Stalin Prize in 1948 for his work on the geology of the Caucasus. In 1946, he was elected to the U.S.S.R. Academy of Sciences as a Corresponding Member.

The works of Rengarten deal with the regional geology of the Caucasus, the Eastern slope of the Urals, the Pamir and Amur territory. Of particular significance is his work on the tectonics of the Caucasus and on the stratigraphy of chalk deposits. Rengarten has made paleontological investigations of cretaceous cephalopodic pelecypods (particularly rudistids), brachiopods, sea urchins. Under the editorship of Rengarten the ninth and tenth volumes of Geology of the U.S.S.R. (1941-47) were published, devoted to the North Caucasus and to the territory beyond the Caucasus.

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REUTOV, OLEG ALEKSANDROVICH (Organic Chemist)

O. A. Reutov was born September 5, 1920. He graduated from Moscow University in 1941 and from then until 1945 served in the military service. In 1945 he began teaching at Moscow University where in 1954 he was made professor. Reutov was elected a Corresponding Member of the U.S.S.R. Academy of Sciences in 1958. In 1942 he became a member of the Communist Party of the Soviet Union. Moscow University awarded him the first Lomonosov Prize in 1956 for his work in synthesis of metallo-organic compounds through diazo compounds.

Reutov worked out a large number of new methods for synthesizing metallo-organic compounds of mercury, arsenic, antimony, bismuth, lead and tin. He proposed new mechanisms of synthesis of metallo-organic compounds through diazo compounds. Reutov also studied the mechanism of carbon substitution reactions, particularly homolytic and electrophilic substitution reactions by the isotope exchange method. He organized a study of bactericidal properties of various metallo-organic compounds and developed an industrial method for obtaining a highly effective disinfectant called "Diotsid."

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RIZNICHENKO, YURII VLADIMIROVICH (Geophysicist)

Yu. V. Riznichenko was born September 28, 1911. He graduated in 1935 from the Kiev Mining-Geological Institute. He became professor in 1947 at the U.S.S.R. Academy of Sciences Geophysical Institute where he had worked since 1938. In 1956 he began working at the Institute of Terrestrial Physics of the U.S.S.R. Academy of Sciences. Since 1950 he has been a member of the Communist Party of the Soviet Union. He was elected, in 1958, a Corresponding Member of the U.S.S.R. Academy of Sciences.

Riznichenko has studied the distribution of seismic waves and developed seismic methods for surveying. He has worked out a general kinematic method of interpreting seismic data--method of the fields of time, the principles of which are set forth in his work "Geometric Seismics of Layered Media" (1946). Under his direction a new method of modeling seismic wave processes has been established.

Riznichenko has attended the Pugwash Conferences.

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ROGINSKII, SIMON ZALMANOVICH (Physical Chemist)

S. Z. Roginskii was born March 25, 1900. He graduated in 1922 from Dnepropetrovsk University. From 1923 to 1928 he taught at the Dnepropetrovsk Mining Institute and, beginning in 1925, was also a scientific worker for the Ukrainian Institute of Physical Chemistry. He worked at the Institute of Chemical Physics of the U.S.S.R. Academy of Sciences in 1928-41 and at the Leningrad Polytechnic Institute. In 1941 he began work at the Institute of Physical Chemistry of the U.S.S.R. Academy of Sciences. Roginskii was elected in 1939 a Corresponding Member of the U.S.S.R. Academy of Sciences.

The works of Roginskii are devoted to study of catalysis, kinetics of heterogeneous reactions, and chemistry and use of isotopes. He showed that the surface of solids is not homogeneous in its adsorption and catalytic properties, and formulated a general theory of adsorption and catalysis for heterogeneous surfaces. He has used the electron microscope in studying the structure of catalysts. Roginskii proposed a microchemical theory for active surfaces. He is the author of the first Soviet article on isotope exchange and the use of artificial radioactive isotopes for studying chemical reactions. He worked out a series of isotope methods for studying surfaces of solid bodies. Roginskii is the author of a theory on the preparation of catalysts ("theory of supersaturation"), in accordance with which the catalytic activity of a solid body grows with the withdrawal of the system from the equilibrium in the process of preparing the catalyst. He studied the kinetics of reactions in the solid phase. Roginskii formulated a crystallization theory of topochemical reactions. He studied chemical reactions of free atoms hydrogen, oxygen, nitrogen and the kinetics of the decomposition of explosives.

Bibliography:

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the Meeting of the U.S.S.R. Academy of Sciences, January 15-
19, 1946. Moscow-Leningrad: 1946.

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ROZHKOV, IVAN SERGEEVICH (Geologist)

I. S. Rozhkov was born in 1908. In 1933 he graduated from the Leningrad Mining Institute. From 1933 to 1957, he worked in the gold-platinum industry. In 1957 he became Chairman of the Yakutsk branch of the U.S.S.R. Academy of Sciences Siberian Branch, and in 1958, was made Director of the Geology Institute of the U.S.S.R. Academy of Sciences Yakutsk Branch. Rozhkov was awarded Stalin Prizes in 1950 and 1951, and served as a delegate and member of the Presidium at the fifth convention of the Yakutsk A.S.S.R. Supreme Soviet. In 1952 he was granted the degree of Doctor of Geologo-Mineral Sciences, and the rank of professor in 1959. Since 1940 he has been a member of the Communist Party of the Soviet Union. He was elected, in 1960, a Corresponding Member of the U.S.S.R. Academy of Sciences.

Rozhkov's principal work is concerned with the geology and geomorphology of ore deposits, metallurgy of gold and platinum, and also methods for surveying and prospecting for ore deposits.

As of 1961, Rozhkov was a Member of the Presidium of the Siberian Branch U.S.S.R. Academy of Sciences.

Bibliography:

and V. S. Koptev-Dvornikov and others. Geological cross-section of the Urals from Zlatovita to Chelyabinsk. Akad. Nauk S.S.S.R. Inst. Geol. Nauk, Moscow-Leningrad 1940.
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RYAZANSKII, MIKHAIL SERGEEVICH (Radio Engineer)

M. S. Ryazanskii was born in 1909. He graduated from the Moscow Power Institute in 1935. A recipient of the Stalin Prize in 1943, he became a member of the Communist Party in 1940. In 1958, he was elected to the U.S.S.R. Academy of Sciences as a Corresponding Member.

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RYKALIN, NIKOLAI NIKOLAEVICH (Metallurgist)

N. N. Rykalin was born September 27, 1903. He graduated from the Far East University in Vladivostok in 1929. From 1930 to 1937, he taught at the Far East Polytechnical Institute and from 1936 to 1953, at the Moscow Technological College where he became a professor in 1946. In 1943-1948, he taught at the Moscow Institute of Construction Engineers. He was elected, in 1953, to the U.S.S.R. Academy of Sciences as a Corresponding Member.

In 1936-39, Rykalin worked at the Central Scientific Research Institute of Industrial Construction in Moscow, and in 1939-53, at the Institute of Machines and in the Section on the Scientific Development of Problems of Electric Welding and Electrothermics of the U.S.S.R. Academy of Sciences. From 1953 he has been working at the Institute of Metallurgy at the U.S.S.R. Academy of Sciences.

The scientific works of Rykalin are devoted to developing of theory and methods of calculating thermal processes in welding.

In 1961, Rykalin was Chairman of the National Committee of U.S.S.R. for Welding.

Bibliography:

Thermal Basis of Welding. Moscow-Leningrad: 1947.

Calculation of Thermic Processes During Welding. Moscow: 1951.

Development of the theory of heat distribution during welding in conformity with the distributed sources. Heat Processes During Welding, Moscow, 1953, 10-58, 89-111, 140-63.

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RYZHKOVA, VITALY LEONIDOVICH (Biologist)

V. L. Ryzhkov was born June 30, 1896. He worked in the Artem Communist University in Kharkov from 1922 until 1930 when he went to Simferopol (now Krimsky) Teachers Institute. In 1934 he was at the University of Kharkov. He began to work in 1936 in the Institute of Microbiology at the U.S.S.R. Academy of Sciences. Since 1946 he has been a Corresponding Member of the U.S.S.R. Academy of Sciences.

Ryzhkov has studied viruses and virus diseases. In 1938 he developed a new process of obtaining the virus of tobacco mosaic in a refined form, conducted a series of investigations into the physiology of viruses and established the character in the change of metabolism in superior plants produced by viruses.

Ryzhkov is a Corresponding Member of the Academy of Medical Sciences and a member of D. I. Ivanovskiy Institute of Virology, Moscow, Academy of Medical Sciences U.S.S.R.

Bibliography:

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A. V. Rzhanov has been working at the P. N. Lebedev

Institute of Physics, U.S.S.R. Academy of Sciences. He visited the United States in 1960 to attend the 20th Annual Conference on Physical Electronics in Cambridge, Massachusetts. In June 1962 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences.

As of November 1962, he was appointed Director of the new Siberian Branch Institute of Solid State Physics and Semiconductor Electronics.

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SADOVSKII, MIKHAIL ALEKSANDROVICH (Physicist)

M. A. Sadovskii was born November 6, 1904. He graduated from Leningrad Polytechnic Institute in 1928. From 1930-1931, he worked at the U.S.S.R. Academy of Sciences Seismological Institute, and from 1941-1946, he was employed on the staff of the U.S.S.R. Academy of Sciences Presidium. In 1946 he began working at the Institute of Chemical Physics. Since 1941, he has been a member of the Communist Party of the Soviet Union. He was awarded the title Hero of Socialist Labor in 1949. He has also been the recipient of a Stalin Prize. In 1953, he was elected to the U.S.S.R. Academy of Sciences as a Corresponding Member.

The scientific work of Sadovskii is devoted to the physics and mechanics of explosions. He studied the destructive action

of a blast, experimentally studied shock waves of explosions in heterogeneous media and determined their basic parameters. Sadovskii substantiated the law of similarity during an explosion. He worked out a number of devices for investigating blast effects.

As of 1961, Sadovskii was Director of the Shmidt Institute of Terrestrial Physics of the U.S.S.R. Academy of Sciences.

Bibliography:

Experimental Investigations of the Mechanical Effect of Shock Waves from an Explosion. Moscow-Leningrad: 1945 (Works of the Seismologic Institute of the U.S.S.R. Academy of Sciences, #116.)

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SAKHAROV, ANDREI DMITRIEVICH (Physicist)

A. D. Sakharov was born May 21, 1921. He graduated in 1942 from Moscow University. In 1945 he began working at the Institute of Physics of the U.S.S.R. Academy of Sciences. He has been an Academician since 1953.

Sakharov's research is in theoretical physics. In 1950, together with I. E. Tamm, he proposed application of an electrical discharge in a plasma, which is placed in a magnetic field, for obtaining a controlled thermomolecular reaction.

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SAKS, VLADIMIR NIKOLAEVICH (Geologist)

V. N. Saks was born April 22, 1911. He graduated from the Leningrad Mining Institute in 1933. From 1935 to 1940, and from 1944 to 1948, he worked at the All-Union Arctic Institute. He was employed, 1940-1944, in the mining geological department of the Main Directorate of the Northern Seaway. In 1948, he worked at the Scientific Research Institute of Arctic Geology. Since 1935 he has been a member of the Communist Party of the Soviet Union. He was elected, in 1955, a Corresponding Member of the U.S.S.R. Academy of Sciences. He has been awarded the Order of the Red Banner of Labor.

Saks' investigations are in quaternary geology, paleogeography, stratigraphy, and tectonics of Mesozoic deposits of the Soviet Arctic, and in the geology of its formation. He presented a general scheme on the separation of quaternary deposits of the Arctic, outlined the paleogeography of the Quaternary Period in the Arctic, and worked out the stratigraphy of Mesozoic deposits of oil-bearing territories of Northern Siberia.

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SAMARIN, ALEKSANDR MIKHAILOVICH (Metallurgist)

A. M. Samarin was born August 14, 1902. In 1930 he graduated from the Moscow Institute of Steel where he remained as a teacher, and professor as of 1938. In 1955, he became deputy Director of the U.S.S.R. Academy of Sciences Institute of Metallurgy. Since 1925 he has been a member of the Communist Party of the Soviet Union. In 1946 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences.

Samarin's scientific work is in electrometallurgy of steel and ferroalloys; he has also been interested in the history of science and technology.

Samarin is Deputy Chairman of the State Committee for the Coordination of Scientific Research. In June 1962, he visited

the United States to attend the Chipman Conference on Physical Chemistry of Steelmaking at Cambridge, Massachusetts.

Samarin, in July 1962, was awarded the Order of the Red Banner of Labor.

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SAPOZHNIKOV, LEONID MIKHAILOVICH (Fuel Technologist)

L. M. Sapozhnikov was born April 29, 1906. After his graduation from the Dnepropetrovsk Mining Institute in 1930, he began to work at the Dnepropetrovsk Coal-Chemical Institute. In 1930 he taught at the Dnepropetrovsk Chemical-Technological Institute where he became a professor in 1935. In 1937 he began work as laboratory chief at the Institute of Fuel Minerals of the U.S.S.R. Academy of Sciences. He was elected, in 1946, a Corresponding Member of the U.S.S.R. Academy of Sciences.

The works of Sapozhnikov deal with the study of the coal coking process.

Bibliography:

and others. Investigating the Process of Coking, Classifying Coal and Calculating the Charge on the Basis of a Layer-Metric Method. Collection of Articles. Kharkov-Dnepropetrovsk: 1935.

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SATPAEV, KANYSH IMANTAEVICH (Geologist)

K. I. Satpaev was born April 11, 1899. He began his education in a two-grade village school. He went on to the Tomsk Technological Institute, where he graduated in 1926. He holds the degree of Doctor of Geological and Mineralogical Sciences and the title of professor. Satpaev has been a member of the Communist Party of the Soviet Union since 1944. In 1946 he became Academician of the U.S.S.R. Academy of Sciences and Academician of the Kazakh S.S.R. Academy of Sciences. He was elected Chairman of the Presidium of the Kazakh S.S.R. Academy of Sciences in 1941 and was made Director of the Institute of Geological Sciences of the Kazakh Affiliate of the Academy of Sciences U.S.S.R. (reorganized in 1946 as the Kazakh S.S.R. Academy of Sciences). He has received a State Prize and the Order of Lenin three times. In 1951 Tadzhik S.S.R. Academy of Sciences made him an Honorary Member. In March 1962, Satpaev was elected delegate from Kazakh S.S.R. to the Supreme Soviet. As of 1961 he was a member of the Presidium of the U.S.S.R. Academy of Sciences.

Satpaev early developed an interest in the potential mineral wealth of his native Kazakhstan. After graduation he worked with the Dzhezkazgan Geological Prospecting Group, 1926-1941. During this period, Satpaev directed explorations of abandoned copper mining areas. Helped by young Kazakhs returning from mining courses in Leningrad, this group discovered one of the richest ore deposits in the world, that of Great Dzhezkazgan. Subsequently, he surveyed the Karsakpay iron ore deposits, twin of the Krivoy Rog deposits, and found lignite. From 1926-1941 he also supervised a geological study of Tadzhik S.S.R. and found important ore deposits. He investigated various deposits of iron, manganese, brown coal, and lignite. During the early period of the war, manganese for steel was in very short supply, due to the German occupation of Nikopol. Satpaev suggested finding manganese in Dzheзда and organized its discovery and mining in record time. During this period, the Kazakh Affiliate of the Academy of Sciences of the U.S.S.R. conducted 350 expeditions resulting in 160 practical proposals to the government.

His major work is devoted to the study of the geology and mineral species of Central Kazakhstan, particularly the study of mineral formations and their use in the national economy. Satpaev supervised the discovery of large scale copper formations and deposits of other minerals in the Ulutau-Dzhezkazgansk Region. He compiled large scale maps for the prognosis for minerals.

Bibliography:

Main features of geology and metallogenesis of the Dzhezkazgansk copper ore region, Greater Dzhezkazgansk.

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Biography:

N. G. Kassin and I. I. Bok. Kanysh Imantaevich Satpaev.

Izvest. Akad. Nauk Kazakh S.S.R., #70, Ser. Geol., 1949, #11.

Vestnik of the Kazakh S.S.R. Akad. Nauk, 1949, #4 (Number devoted to the 50th anniversary of Satpaev.)

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SAUKOV, ALEKSANDR ALEKSANDROVICH (Geochemist)

A. A. Saukov was born August 15, 1902. After graduating from the Leningrad Polytechnic Institute, he has worked at the U.S.S.R. Academy of Sciences. In 1949 he became Chairman of the Department of Geochemistry of the Institute of Geological Sciences. He was made professor in 1952 at Moscow University. In 1953 Saukov was elected a Corresponding Member of the U.S.S.R. Academy of Sciences. He has been a member of the Communist Party of the Soviet Union since 1945. For the monograph Geochemistry of Mercury he was awarded a Stalin Prize in 1947, and in 1952 he received a Stalin Prize for the second edition of Geochemistry.

Saukov's investigations are in the geochemistry of rare elements and of mercury. On the basis of a method developed by him for the determination of small quantities of mercury, he studied the distribution of mercury in various rocks and minerals; he studied the genesis of mercury deposits and proposed a method of prospecting for them based on a study of the so-called "dispersion halo." A number of investigations of Saukov deal with general questions of geochemistry, including energetics of natural processes and natural association of elements, problems of their migration, the geochemical methods of prospecting for deposits of commercial minerals. He is the author of a textbook, *Geochemistry*, which was translated into Bulgarian, German, Chinese, Polish and Czech, Rumanian, Georgian.

Bibliography:

Geochemistry of Mercury. Moscow: 1946.

Geochemistry, 2nd ed. Moscow: 1951.

and A. I. Perel'man. *Geochemical methods of prospecting for deposits of commercial minerals.* Papers of the All-Union Mineralogic Society, 2nd series, 1957, Part 86, #2.

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SAZHIN, NIKOLAI PETROVICH (Metallurgist)

N. P. Sazhin was born March 13, 1897. He received Stalin Prizes in 1946 and 1952. In 1953 he was elected to the U.S.S.R. Academy of Sciences as a Corresponding Member.

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SCHISHKIN, BORIS KONSTANTINOVICH (Botanist)

B. K. Schishkin was born April 19, 1886. He graduated from Tomsk University in 1911, and worked there as an assistant from 1914 to 1918, and as a professor from 1925 to 1930. In 1931 he became an associate of the U.S.S.R. Academy of Sciences Botanical Institute, and served as its Director from 1938 to 1949. He was awarded a State Prize in 1952. In 1943 he was

elected to the U.S.S.R. Academy of Sciences as a Corresponding Member.

Schishkin conducted botanical investigations in Siberia, Middle Asia, the Caucasus and the Carpathians; also he made trips into Turkey, Algeria, Brazil, and French Guiana. He published numerous works, particularly on the flora of the U.S.S.R. A series of collective works (the majority of volumes devoted to "Flora of the U.S.S.R.", "Flora of Western Siberia" by P. N. Krylov, "Flora of the Leningrad Territory") was published under his editorship.

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Outlines of the Uryankhaiskii Territory. Tomsk: 1914.

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Family CXIX umbelliferae moris. Flora of the U.S.S.R., chief editor V. L. Komarov, 16-17. Moscow-Leningrad: 1950-51.

Biography:

I. A. Linchevskii. Boris Konstantinovich Schishkin (On the 60th Anniversary since the date of birth). Soviet Botany, 1946, #5 (contains bibliography of the works of Shishkin).

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SCHMALHAUSEN (SHMAL'GAUZEN), IVAN IVANOVICH
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I. I. Schmalhausen, son of I. F. Schmalhausen (1948-1895, Russian botanist and one of the founders of paleobotany in Russia), was born April 23, 1884. In 1907 he graduated from Kiev University. He was professor at the Voronezh (1918), Kiev (1921) and Moscow (1938-48) Universities. From 1930 to 1941 he was Director of the Institute of Zoology and Biology of the Ukrainian S.S.R. Academy of Sciences, and from 1938 to 1948 he was also Director of the Institute of Evolutionary Morphology (now the Institute of Animal Morphology) of the U.S.S.R. Academy of Sciences. In 1948 he began working at the Zoological Institute of the U.S.S.R. Academy of Sciences. Schmalhausen

has been an Academician of the Ukrainian S.S.R. Academy of Sciences since 1922 and since 1935 Academician of the U.S.S.R. Academy of Sciences. In 1935 he was an Honored Scientist of the Ukrainian S.S.R., and in 1960, a fellow of the Academy of Zoology in Agra (India), and a fellow of the German Academy "Leopoldina" in Helle.

Schmalhausen, specialist in comparative anatomy, has worked in evolutionary morphology, on the regularities in the growth of animals, on factors and characteristics of the evolutionary processes. He has also been concerned with the history of development, and the comparative anatomy of unpaired fins of fish, and the origin of extremities of land vertebrates. He proposed a theory on the growth of animal organisms, based on the conception of a reverse ratio between the speed of growth of an organism and the speed of its change. He has formulated a theory of stabilizing selection as an essential factor in evolution. Since 1948 he has been studying the origin of land vertebrates (Tetrapoda).

Bibliography:

Unpaired fins of fish and their phylogenetic development. Dissertation, Kiev, 1913. (In German: Z. wiss Zool. Bd 400, 104, 107, 1912, 1913.)

Development of the extremities of amphibians and their significance in the question on origin of extremities in land vertebrates. Dissertation, Moscow, 1915.

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Factors of Evolution (Theory of Stabilizing Selection).

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Problems of Darwinism. Moscow: 1946.

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SEDOV, LEONID IVANOVICH (Mechanics Physicist)

L. I. Sedov was born November 14, 1907. In 1931 he graduated from Moscow University and in 1937 was appointed professor there. He began work in 1931 at the Central Aerohydrodynamic Institute. In 1947 he started working at the Central Institute of Aviation Motor Building. Sedov is Chairman of the Interdepartmental Commission on Coordination and Control of Scientific Theoretical Research in the Area of Organization and Realization of Interplanetary Communication. In 1946 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences and in 1953 an Academician. The U.S.S.R. Academy of Sciences awarded Sedov in 1946 the Prize of S. A. Chaplygin. In 1952 he received a Stalin Prize.

Sedov investigated various problems of mechanics. He determined the aerodynamic forces during a non-stabilized movement of the wings, in particular during vibrations. Sedov generalized the theorem of N. E. Zhukovskii for arbitrary motion of the wing; formulated a mathematical method for solving problems of stream flow around wing profiles. This method was applied by him to the theory of a finite wing, and subsequently widely applied in the theory of waves, in elasticity, and in filtration. In his treatise "Plane Problems of Hydrodynamics and Aerohydrodynamics," Sedov formulated a theory on gliding which was applied in hydroaviation and ship building. Sedov studied the impact of bodies against water, ricocheting and other problems of heavy liquid hydrodynamics. He developed a method for visualizing the stream line flow of gas past a grating and worked out a method for investigating possible gas flows, widening the approximate method of S. A. Chaplygin. In the theory of similarity and dimensionality, Sedov constructed a theory of unstabilized gas motion, in particular the theory of dispersion of strong shock waves, obtained results on the theory of surface waves; established the law of pulsation in an isotropic turbulence. His work "Propagation of Strong Explosive Waves" (1946) is a study of strong shock waves. Sedov has also been concerned with problems of astrophysics.

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Propagation of strong explosive waves. Priklad. Mat. i Mekh., 1946, 10, #2.

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N. D. Moiseev. General Outline of the Development of Mechanics in Russia and in the U.S.S.R. Mechanics in the U.S.S.R. for 30 Years. Moscow-Leningrad: 1950.

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SEMENOV, NIKOLAI NIKOLAEVICH (Physical Chemist)

N. N. Semenov was born April 15, 1896. In 1917 he graduated from Petrograd University. During the years 1920-31, he worked at the Leningrad Physico-Technical Institute. He became Chief of the Institute of Chemical Physics of the U.S.S.R. Academy of Sciences in 1931 and subsequently the Director. In 1928 he was made professor at the Leningrad Polytechnic Institute and in 1944 professor at the Moscow University. He was a Corresponding Member of the U.S.S.R. Academy of Sciences from 1929 until 1932 when he was elected Academician. In 1947 he became a member of the Communist Party of the Soviet Union. He was awarded a Stalin Prize in 1941, and in 1956 the Nobel Prize.

Semenov's first scientific work was in molecular physics and electron phenomena such as: vapor condensation on solid surfaces, the ionization of vapors of salts under the influence of an electron bombardment, and electric breakdown of dielectrics. And he also developed a thermal theory of the dielectric breakdown. The initial assumptions of this theory were utilized by Semenov in his theory of thermal explosions of gas mixtures. According to this theory, the cause of the explosion is the unattainment of the heat equilibrium during

chemical reaction, because the heat liberated does not have time to leave the reaction zone. Semenov and his students studied energy distribution in a flame, detonation, and combustion of explosives and powders. The investigations of Semenov on the theory of chain reactions is particularly significant. On the basis of the study of critical phenomena, such as limit of ignition, observed during oxidation of vapors of phosphorus, hydrogen, carbon monoxide and other compounds, he discovered branching reactions. In his monograph, "Chain Reactions" (1934), he developed the theory of non-branching reactions and showed the wide distribution of chain reactions in chemistry. He and his associates developed theoretically and checked experimentally many ideas of the chain theory: the breaking of reaction chains on walls and in the volume of a container, degenerate chain branching, positive and negative interaction of chains. Also, he established the detailed mechanism in a series of complex chain processes, and studied the properties of free atoms and radicals with the aid of which the elementary stages of these processes were realized. Semenov took active part in organizing a physico-mechanical department at the Leningrad Polytechnic Institute and in starting scientific journals. He trained many specialists in physics, chemical kinetics, and the combustion theory.

In March 1962, Semenov was elected a delegate from R.S.F.S.R. to the Supreme Soviet. As of 1961, he was Secretary of the Department of Chemical Sciences of the U.S.S.R. Academy of Sciences.

In 1961 he was elected Candidate Member of the Central Committee of the Communist Party.

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SEVERIN, SERGEI EVGEN'EVICH (Biochemist)

S. E. Severin was born December 21, 1901. He graduated from Moscow University in 1924 and worked at the Physiology Laboratory of the Institute of Professional Diseases in Moscow. In 1932-48 he was professor at the Third Moscow Medical Institute and in 1933 at Moscow University. He was the Director of the Institute of Nutrition in 1945-47, and in 1948-49, of the Institute of Biological and Medical Chemistry of the U.S.S.R. Academy of Sciences. Severin was Academician-Secretary of the Department of Medico-Biological Sciences of the U.S.S.R. Academy of Medical Sciences in 1949-57. He has been a member of the U.S.S.R. Academy of Medical Sciences since 1948 and since 1953 a Corresponding Member of the U.S.S.R. Academy of Sciences.

Severin's major investigations deal with muscle tissue biochemistry. In his investigation of carnosine and anserine in the metabolism of the skeletal muscles, together with others, he determined the time and the sequence of appearance of these compounds in the development of the organism; he synthesized phosphorous derivatives of a series of amino acids and peptides and studied their properties; he showed the influence of carnoside and anserine on raising the effectiveness of phosphorylation in the skeletal muscles which lead to the formation of energy rich phosphorous compounds necessary for muscle function. The early investigations deal with the biochemistry of blood, particularly blood preservation.

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and N. P. Meshkova. Practicum on the Biochemistry of Animals, 1950.

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SEVERNYI, ANDREI BORISOVICH (Astronomer)

A. B. Severnyi was born May 11, 1913. He graduated from Moscow University in 1935. In 1946 he started to work at the U.S.S.R. Academy of Sciences Crimean Astrophysical Observatory where he became Director in 1952. He was awarded a Stalin Prize in 1952 for his studies in solar chromospheric flares, and in 1958 was elected to the U.S.S.R. Academy of Sciences as a Corresponding Member.

Severnyi has worked in theoretical astrophysics and the physics of the sun.

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and E. F. Shaposhnikova. Investigation of the development of chromospheric flares on the sun. Publications of the Crimean Astrophysical Observatory, 1954, 12, 3-32.

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SHAFAREVICH, IGOR' ROSTISLAVOVICH (Mathematician)

I. R. Shafarevich was born June 3, 1923. He graduated in 1940 from Moscow University. In 1943 he began working at the Mathematics Institute of the U.S.S.R. Academy of Sciences. He also taught at Moscow University, beginning in 1944, and in 1953 was made professor. Since 1958 he has been a Corresponding Member of the U.S.S.R. Academy of Sciences.

The main works of Shafarevich are concerned with algebra and theory of algebraic numbers.

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and A. I. Kostrikin. Group of homologies of nilpotent algebras. *Doklady Akad. Nauk S.S.S.R.*, 1957, 115, #6.

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SHAKHOV, FELIKS NIKOLAEVICH (Geologist)

F. N. Shakhov was born October 24, 1894. Upon graduation from the Tomsk Technological (now the Polytechnic) Institute in 1922, he continued to work there where he became a professor in 1935. In 1944, he began work in the West Siberian branch of the U.S.S.R. Academy of Sciences, and since 1957 he has been at the U.S.S.R. Academy of Sciences Siberian Branch

Institute of Geology and Geophysics (Novosibirsk). He was elected a Corresponding Member of the U.S.S.R. Academy of Sciences in 1958.

Shakov has worked in the geology of ore deposits, in particular the formation of metals in various regions, the genesis of various deposits, and methods of prospecting-survey work. Lately, he has been conducting investigations in the field of the geology of rare and radioactive elements.

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SHAL'NIKOV, ALEKSANDR IOSIFOVICH (Physicist)

A. I. Shal'nikov was born May 10, 1905. He graduated in 1928 from Leningrad Polytechnic Institute. He began working in 1935 at the U.S.S.R. Academy of Sciences Institute of Physics, which he helped to organize. In 1938 he became professor at Moscow University. Since 1946 he has been a Corresponding Member of the U.S.S.R. Academy of Sciences. He has been awarded a Stalin Prize.

The work of Shal'nikov deals with low temperature experimental physics: the study of the properties of thin metallic film and colloids. He investigated the structure of the intermediate state of super-conductors.

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SHAPOSHNIKOV, VLADIMIR NIKOLAEVICH (Microbiologist)

V. N. Shaposhnikov was born February 24, 1884. He worked at Moscow University after graduating from there in 1910, and in 1938 became a professor at this University. From 1921 to 1935 he worked at the State Scientific Research Chemico-Pharmaceutical Institute. In 1938 he became Chairman of a Department in the Institute of Microbiology of the U.S.S.R. Academy of Sciences. Shaposhnikov has been an Academician of the U.S.S.R. Academy of Sciences since 1953. In 1949 he was awarded a Stalin Prize.

Shaposhnikov's main investigations are in technical microbiology. While studying metabolism in microorganisms, he worked out a classification of energy processes which reflect processes of evolution of fermenting microorganisms. The investigations of Shaposhnikov had considerable significance for organization and improvement of a number of industrial processes, which were based on the action of microorganisms. His studies of the physiology of lactic bacteria allowed him to work out an industrial scheme for producing lactic acid (the so-called protein method); investigations of butyric and acetic acid bacteria also led to the improvement of corresponding processes. In 1929 Shaposhnikov undertook the study of acetone-butyl fermentation, at first in the laboratory and subsequently under semi-plant conditions. The process data obtained were used in planning and construction of the first U.S.S.R. Acetone-butyl plant. His work on the mobility of sap in plants found a practical application in a new method of tapping pines.

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SHCHEGLYAEV, ANDREI VLADIMIROVICH (Heat Engineer)

A. V. ShcheglyaeV was born October 20, 1902. After graduating from Moscow Technical College in 1926, he taught there. In 1924 he began working at the All-Union Heat Engineering Scientific Research Institute. He joined the teaching staff of Moscow Institute of Energetics in 1930 and in 1948 became professor. Since 1953 he has been a Corresponding Member of the U.S.S.R. Academy of Sciences. In 1948 and in 1952 he received Stalin Prizes.

ShcheglyaeV studied heat processes of steam turbines and their regulation systems in the testing of turbines. He participated in developing new systems of regulating turbines.

In October 1962 ShcheglyaeV was awarded the Red Banner of Labor.

Bibliography:

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SHCHELKIN, KIRILL IVANOVICH (Physicist)

K. I. Shchelkin was born May 17, 1911. He graduated from the Pedagogical Institute in Simferopol' in 1932 and began to work at the Institute of Chemical Physics of the U.S.S.R. Academy of Sciences. He has been a member of the Communist Party of the Soviet Union since 1940. In 1953 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences.

Shchelkin made a considerable contribution to the development of gas dynamics of burning. He experimentally proved the presence of a considerable influence of turbulent flow in an initial mixture on flame acceleration and developed conditions for the transfer of slow burning into detonation. Shchelkin investigated burning in a turbulent flow. He studied spin denotation and the proposed theory for this phenomenon.

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SHCHERBAKOV, DMITRII IVANOVICH (Geologist)

D. I. Shcherbakov was born January 13, 1893. After graduating in 1922 from Simferopol' University, he worked in institutions of the U.S.S.R. Academy of Sciences. He was a student of V. I. Vernadskii and A. E. Fersman, Russian geochemists. He also taught at Leningrad University, beginning in 1922 and from 1928 to 1932 at the Leningrad Polytechnic Institute. From 1939 to 1954, Shcherbakov was at the Institute of Geological Sciences of the U.S.S.R. Academy of Sciences. In 1953 he became Academic Secretary of the Department of Geological and Geographic Sciences of the U.S.S.R. Academy of Sciences. He was elected a Corresponding Member of the U.S.S.R. Academy of Sciences in 1946 and in 1953 an Academician.

Shcherbakov's main works are devoted to geology and geochemistry of rare metals and radioactive elements. He participated as a student in radium expeditions of the Academy of Sciences (from 1914). Later he participated in the Pamir Expedition (1928), in the Tadzhik-Pamir Expedition (until

1936) and also in expeditions on territories beyond the Baikal, Kazakhstan, Crimea, Karelia, Central Urals, Kol'skii Peninsula and other regions. In 1927 Shcherbakov became acquainted with some deposits of Central Europe and Sicily. In 1956 he was the head of a U.S.S.R. delegation at the 20th Session of the International Geological Congress in Mexico. Shcherbakov used a comprehensive geochemical approach to study the distribution of rare element deposits. He also studied the geology of Central Asia. Shcherbakov has also been active in popularizing geology.

As of 1961 Shcherbakov was Chairman of the Antarctic Commission of the U.S.S.R. Academy of Sciences.

In January 1961, he visited the United States to participate in National Academy of Sciences conferences and meetings at Stanford University, California.

Bibliography:

The meaning of determination of the age of intrusions for practical geology. Works of the 1st Session of the Commission on Determination of the Absolute Age of Rocks (April 12-15, 1952), Moscow, 1954, 203-211.

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SHCHUKIN, ALEKSANDR NIKOLAEVICH (Radioengineer)

A. N. Shchukin was born July 22, 1900. In 1927 he graduated from the Leningrad Electrotechnical Institute. He taught there from 1929 to 1941 and in 1939 was made a professor. At about

the same time, 1933 to 1945, he was also teaching at the Leningrad Military-Naval Academy. He worked in several research institutions including the Leningrad Electrophysical Institute and the Central Radio Laboratory of a Trust for Low Voltage Plants. Shchukin has been a Major General in the Engineering-Technical Service. He became a member of the Communist Party of the Soviet Union in 1944. In 1946 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences and in 1953 an Academician.

Shchukin's main work is in the propagation of short waves and in short wave communication at great distances in two-way radiotelegraph broadcasting without power losses and methods of controlling pulse distortions, the study of non-stationary processes in resonance and band amplifiers.

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A. N. Shchukin. Radio, 1947, #4.

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SHEMYAKIN, MIKHAIL MIKHAILOVICH (Organic Chemist)

M. M. Shemyakin was born July 26, 1908. After graduating from Moscow University in 1930, he worked at the Scientific Research Institute of Organic Intermediates and Dyes until 1935. From 1930 to 1937 he was also at the Moscow Institute of Fine Chemical Technology and from 1935 to 1945 at the All-Union Institute of Experimental Medium. Shemyakin was made professor, in 1942, at the Moscow Textile Institute where he had been working since 1937. In 1945 he began work at the Institute of Biological and Medical Chemistry of the U.S.S.R. Academy of Sciences and in 1958 at the Institute of Organic Chemistry of the U.S.S.R. Academy of Sciences. He became a member of the Communist Party of the Soviet Union in 1951.

In 1953 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences and in 1958 an Academician.

As of 1961 Shemyakin was Director of the Institute of Chemistry of Natural Compounds.

In May 1960, Shemyakin visited the United States on an exchange program at the California Institute of Technology.

Bibliography:

and A. S. Khokhlov. Chemistry of Antibiotic Substances, 2nd ed. Moscow-Leningrad: 1953.

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SHEVYAKOV, LEV DMITRIEVICH (Mining Specialist)

L. D. Shevyakov was born January 15, 1889 in Vetluga in the former Kostroma province. He received his secondary education at the Nizhnii-Novgorod gymnasium, and his higher education at the Ekaterinoslav (now Dnepropetrovsk) Mining Institute, from which he graduated in 1912 as a mining engineer. The mining graduation project on which he worked as a student was awarded the Kublin Prize, and his project on metallurgical mechanics was given an honorable mention. Following one year of work at the Donbas mines, he was enrolled as an assistant in the mining faculty of the Ekaterinoslav Institute, and in 1916, he was appointed a docent at the same faculty. After defending his dissertation in 1919 on the subject "Discovery of Hard Coal Deposits," he was awarded the degree of Mining Assistant (adjunct) and, in 1920, he was appointed professor in the mining faculty.

Shevyakov served during his graduate work and after, until 1928, as professor and director of the mining faculty of the Ekaterinoslav Mining Institute. In 1920-1922, he served with B. I. Bokii, A. M. Terpigorev, A. A. Skochinskii, and V. A. Guskov as a member of a Special Commission charged with the restoration of the Donbas hard coal and anthracite industry. After being sent on a mission by the VSNKh SSR (Supreme Council of the National Economy of the USSR) to Germany, U. S. A.,

England, and Scotland in 1925, he published a number of articles describing the status and trends of the development of the foreign mining industries. From 1929 to 1932, he served as professor at the Tomsk Technological Institute; from 1932 to 1944, as professor on the mining faculty at the Sverdlovsk Mining Institute, and from 1944 to 1950, as professor and director of the faculty for the mining of blanket deposits at the Stalin Moscow Mining Institute.

During these years, he served as permanent consultant and mining expert for numerous design establishments, main administrations, and individual mining enterprises, such as Donugol, Yugostal (Southern Steel Industry Trust), Soletrest, Kuzbasugol (State Association of the Hard Coal Industry of the Kuznetsk and Minusinsk Basins), Uralugol, Giproshakht (State Institute for the Design of Mine Construction in the Hard Coal Industry) and its Siberian affiliate, Gipromedruda (State Institute for the Design and Planning of Copper Mining Establishments). During the restoration of the Donbas, he was in charge of a design group in Dnepropetrovsk, which conducted numerous designs of mines in the Donets Basin. He was directly concerned with the development of design projects for high-capacity mines in the Kuznetsk Basin, and he acted as consultant in working out design projects for coal mines in many regions of Siberia.

The Ural affiliate of the Academy, which served the varied economy and industry of the Urals, expanded its scientific activities under his direction. During World War II, Shevyakov conducted extensive work in the Commission for mobilizing the resources of the Ural region, Western Siberia, and Kazakhstan to serve defense requirements. In 1942, Shevyakov, with A. A. Skochinskii, worked to restore the Donets and Moscow Basins destroyed by the Germans. In January 1942, he worked in the town of Karpinsk, where he determined the possibility of expanding coal production from the Bogoslovsk deposits in the Urals. In May 1942, he worked at the Ural Aluminum Plant in connection with the expansion of Bauxite production in Kamensk Region; in June-July 1942, he was in Kazakhstan where he increased coal production, ore production, and the smelting of metals. In September 1942, he worked in Korkino and Kopeysk where he served as consultant on a number of technical problems concerning the development of coal extraction by the open pit method.

In February-March of 1943, he was a member of the commission entrusted with the determination of the status of the

available ore reserves supplying the Kuznetsk metallurgical plants, the determination of the production capacities of mines in the Kuznetsk Basin, and the improvement of power facilities in industrial centers of Western Siberia. In August-September of 1943, he was engaged in similar work in Krarganda. He worked in the Commission of the Peoples' Commissariat for the Coal Industry, which was charged with the establishment of rational systems for the extraction of the rich coal beds located at the Prokopyevsk-Kisel region of the Kuznetsk Basin, as well as the increased production of coking coal in the Osinovsk region. Almost immediately after the Mining Institute moved back to Moscow, Shevyakov worked there in establishments subordinate to the U.S.S.R. Academy of Sciences.

During the past 20 years, he was a member of the Presidium of Technical Councils in the Ministry of the Coal Industry, the Ministry for the Building of Coal Enterprises, the Ministry of Nonferrous Metallurgy, and frequently served as the chairman of expert commissions to study important coal and ore mining technical problems.

In 1943, he was appointed a member, and in 1946, director of the Council for Scientific and Technical Consultation under the Gosplan (State Planning Commission of the USSR), which discussed the most important problems concerning the regional distribution and development of industry. From 1947 to 1957, he was a member of the Gosplan of the U.S.S.R. He has actively participated in All-Union Conferences, and works for close contacts between Soviet mining scientists and personnel employed in industry and in design and training institutes located in outlying districts. He is an active member of the All-Union Society for the Dissemination of Political and Scientific Knowledge. From 1947 to 1950, he served as a delegate of the Second Moscow City Council of Workers' Deputies; for many years, he was elected a member of the Orgbyuro (Organization Bureau) of the All-Union Scientific-Technical Mining Society. From 1941 to 1944, he served as president of the Orgbyuro of this society, and from 1953 to 1955, he acted as director of the section for underground mining of coal deposits.

Shevyakov is a member of the editorial boards of the following scientific-technical journals: *Izvestia An SSSR, Otdelenie tekhnicheskikh nauk* (Bulletin of the USSR Academy of Sciences, Division of Technical Sciences), *Ugol* (Coal), *Gornii Zhurnal* (Mining Journal), *Byulleten ITEIN* (Bulletin of the Institute of Technical and Economic Information); he is also a member of

the editorial council of Ugletekhizdat (State Scientific and Technical Publishing House of Literature on the Coal Industry).

He has frequently served as president of juries for All-Union contests involving the best design project of mining systems adapted to various conditions of complex mechanized equipment used on mine surfaces. He also constantly takes part in the examination and evaluation of projects submitted in competition for Lenin prizes, acting in the capacity of president of the mining and metallurgical section, and as a member of the Committee.

In 1939, he was elected an Academician of the U.S.S.R. Academy of Sciences, appointed Deputy Director of the Ural affiliate of it, and Director of the Mining and Geological Institute of the affiliate. In 1941, he was elected a member of the Bureau of the Section of Geological and Geographic Sciences, and served in this capacity until 1945. In 1942, he was awarded a Stalin Prize for participation in a study entitled "On the Development of the National Economy of the Urals Under Wartime Conditions," and, in 1943, together with workers in the coal industry, he was awarded the Order of the Red Banner of Labor for fulfilling government assignments calling for increased coal production under wartime conditions. He received a badge honoring him as an "Outstanding Worker" in socialist competition sponsored by the Peoples' Commissariat of the Coal Industry. In 1945, Shevyakov was awarded a second order of the Red Banner of Labor; in 1948, he was awarded the Order of Lenin and medals "For the Restoration of the Donbas" and "In Commemoration of Moscow's 800th Anniversary." In June 1956, he was awarded the title of honorary member of the Mining Society and in 1957, he received the badge, "Coal Miner's Glory," first degree as a reward for his activities aimed at the development of mining science and technology.

Shevyakov was awarded several prizes by the Presidium of the U.S.S.R. Academy of Sciences for his studies entitled, "Search for New Highly Productive Methods for Underground Mining of Rich Deposits of Hard Ores" (1956), and "Scientific Foundations of New Technical Equipment Used to Promote the Further Development of the Production of Coal, Ores and Other Minerals by the Open Pit Method" (1957).

The work of Shevyakov is concerned with problems of mine production and design, coal and ore mining for high production and efficiency, various problems presented by local mining situations, such as the Kursk magnetic anomaly.

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SHIRKOV, DMITRII VASIL'EVICH (Theoretical Physicist)

D. V. Shirkov was born in 1928. In 1949 he graduated from Moscow State University. From 1956 to 1960 he worked in the Joint Institute of Nuclear Research, and in 1960 took a position at the Mathematics Institute of the U.S.S.R. Academy of Sciences Siberian Branch. Shirkov was awarded the Doctor of Physico-Mathematical Sciences degree in 1957. Since 1953 he has been a member of the Communist Party of the Soviet Union. He was elected, in 1960, a Corresponding Member of the U.S.S.R. Academy of Sciences.

Shirkov's principal work is in the field of the theory of elementary particles.

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SHOSTAKOVSKII, MIKHAIL FEDOROVICH (Organic Chemist)

M. F. Shostakovskii was born in 1905. In 1929 he graduated from Irkutsk State University. From 1935 to 1938 he was a senior scientific worker at the U.S.S.R. Academy of Sciences Institute of Organic Chemistry. In 1939 he was appointed Chief of the Laboratory on Vinyl Compounds, and in 1957 became Director of the Irkutsk Institute of Organic Chemistry of the U.S.S.R. Academy of Sciences Siberian Branch. Since 1946 he has been a member of the Communist Party of the Soviet Union. He was elected, in 1960, a Corresponding Member of the U.S.S.R. Academy of Sciences. He has been awarded a Stalin Prize.

Shostakovskii developed a therapeutic balsam of polyvinyl pyrrolidone which is used as a blood substitute.

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SHTERN, LINA SOLOMONOVNA (Physiologist)

L. S. Shtern was born August 26, 1878 in Libava (Latvian S.S.R.). After graduating in 1903 from the University of Geneva, she remained there to work and in 1917 became a professor. In 1925 she moved to the U.S.S.R. and from 1925 to 1949 was professor at the Second Moscow Medical Institute (until 1930 the Medical Department of the Second Moscow University). About the same time, 1929-1949, she was also Director of the Institute of Physiology. In 1954 Shtern started working at the Institute of Biological Physics of the U.S.S.R. Academy of Sciences. She has been a member of the Communist Party of the Soviet Union since 1938. She is an Academician of the Ukrainian S.S.R. Academy of Sciences and in 1939 was elected Academician of the U.S.S.R. Academy of Sciences and in 1944 a member of the U.S.S.R. Academy of Medical Sciences. She was an Honored Scientist of the R.S.F.S.R. in 1934, and in 1954 she was a recipient of a Stalin Prize.

Shtern studied the chemical basis of physiological processes. Jointly with the Swiss scientist, F. Batteli, she investigated the respiration of isolated tissues and elucidated the role of various catalysts (in particular the catalase system) in biological oxidation. Shtern and her associates studied the hematoencephalitic (blood-marrow) barrier which regulates the formation and the composition of cerebrospinal liquid.

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Biography:

L. S. Shtern. Problems of Biology and Medicine. Collection Devoted to the 30th Anniversary of the Scientific, Pedagogical and Social Activity of Honored Scientist Lina Solomonovna Shtern. Moscow-Leningrad: 1935.

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SHUBNIKOV, ALEKSEI VASIL'EVICH (Crystallographer)

A. B. Shubnikov was born March 29, 1887. After graduating from Moscow University in 1912 he did research and taught at the People's University of Shanyanvskii in Moscow as assistant to G. V. Vul'f (1863-1925, specialist in crystallography). From 1920 to 1925 he was visiting professor at the Urals Mining Institute in Ekaterinburg (now Sverdlovsk). He has been with the U.S.S.R. Academy of Sciences since 1925. In 1937 he was made Chief of the Laboratory of Crystallography and in 1944, Director of the Institute of Crystallography which he helped found. Also, in 1953 he became a professor at Moscow University. He was elected a Corresponding Member of the Academy of Sciences in 1933, and in 1953 Academician. Shubnikov was a member of the All-Union Mineralogical Society (1919), honorary member of the British Mineralogical Society (1945), and honorary member of the French Mineralogical Society (1947). In 1946 and 1950 he was awarded Stalin Prizes, and in 1962 the Red Banner of Labor.

Shubnikov's areas of research are growth of crystals, electric and optical properties of crystals, study of symmetry (piezo-electric properties of crystals, methodics of cutting, processing and polishing crystals).

In 1962 Shubnikov was relieved of his position as Director of the Institute of Crystallography.

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SHUIKIN, NIKOLAI IVANOVICH (Organic Chemist)

N. I. Shuikin was born March 30, 1898. He was a student of N. D. Zelinskii (1861-1953, Russian catalytic chemist). In 1927 he graduated from Moscow University where he worked from 1930 and became a professor in 1943. In 1937 he began working at the Institute of Organic Chemistry of the U.S.S.R. Academy of Sciences. Shuikin has been a member of the Communist Party of the Soviet Union since 1942. In 1953 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences.

Shuikin has studied the preparation of catalysts for dehydrogenation of six and five membered cyclanes and alkanes. A number of these catalysts are used for the production of aromatic hydrocarbons. He studied the hydrogenation and hydrogenolysis of the furan nucleus.

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SHULEIKIN, VASILII VLADIMIROVICH (Geophysicist)

V. V. Shuleikin was born January 13, 1895. He initiated the organization of the Black Sea Hydrophysical Station in the Crimea in 1929, a marine hydrophysical laboratory in 1935, a Department of Marine Physics at Moscow University in 1945, and a sea laboratory of the Moscow Hydrometeorological Institute in 1930. Shuleikin became a member of the Communist Party of the Soviet Union in 1942. In 1929 he was elected a Corresponding Member and in 1946 an Academician of the U.S.S.R. Academy of Sciences. The All-Union Geographic Society awarded him a medal of P.P. Semyonov-Tyan-Shanskii. And in 1942 he received a Stalin Prize.

Shuleikin's investigations are devoted to the physics of the sea. He presented a theory on the heat balance of the sea, thus allowing prediction of the presence of a deep warm current in the Karsk Sea. He proposed a theory on heat interaction between the ocean, atmosphere, and land, and investigated the oscillating phenomena in this system and the increase in wind speeds against sharp-edged capes. On the basis of new experimental data, he advanced a theory on sea waves. He explained the origin of sea and lake coloring. He obtained an equation of a spectral curve of the sea and worked on other aspects of sea optics. He invented a series of devices for investigating the sea. He participated in several oceanic and sea expeditions and was the head of a number of them.

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Biography:

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SHVETSOV, PYOTR FILIMONOVICH (Geologist)

P. F. Shvetsov was born January 27, 1910. After graduating from Moscow Geological Survey Institute in 1935, he worked in the Main Directorate of the Northern Seaway. In 1939 he began working at the Institute of Permafrost of the U.S.S.R. Academy of Sciences (1941-1945 he served in the Soviet Army). In 1948 he was made deputy Director and in 1956 Director of this Institute. Shvetsov has been a member of the Communist Party of the Soviet Union since 1940. In 1953 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences. He received in 1952 a Stalin Prize.

Shvetsov's main works are devoted to the study of the regularities in formation of underground water in regions of perpetually frozen ground.

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SIDORENKO, ALEKSANDR VASIL'EVICH (Geologist)

A. V. Sidorenko was born October 19, 1917. He graduated in 1940 from Veronezh University. In 1943-1950 he worked in the Turkman branch of the U.S.S.R. Academy of Sciences. He began working at the Kol'skii branch of the U.S.S.R. Academy of Sciences in 1950 and in 1952 was elected Chairman of the

Presidium. Sidorenko has been a member of the Communist Party of the Soviet Union from 1942. In 1953 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences.

Sidorenko has studied the geomorphology and geology of the structure of deserts, processes of mineral formation in conditions of desert climate, and phenomena of hypergenesis. He also investigated phosphorous minerals and mineralogy of veined deposits of the Turkman S.S.R.

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SIFOROV, VLADIMIR IVANOVICH (Radio Engineer)

V. I. Siforov was born May 31, 1904. He graduated in 1929 from the Leningrad Electro-Technical Institute and taught there in 1930-1941 and in 1946-1953; in 1938 he was made professor. From 1928-1941 he worked in the Central Radio Laboratory in Leningrad. He taught in 1941-1952 at the Leningrad Military Air Engineering Academy. In 1953 Siforov began working at the Scientific Research Institute of Communication and in 1955 at the Institute of Radiotechnics and Electronics of the U.S.S.R. Academy of Sciences. He has been a member of the Communist Party of the Soviet Union since 1941. In 1953 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences.

Siforov has worked on the theory, calculation, and design of radio receiving devices and amplifiers. He is the author of a widely known text "Receiving Devices" (1939, 5th edition, 1954).

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SISAKYAN, NORAIR MARTIROSOVICH (Biochemist)

N. M. Sisakyan was born January 25, 1907. He graduated from the K. A. Timiryazev Agricultural Academy, Moscow, in 1932, and in 1939 began working at the Institute of Biochemistry of the U.S.S.R. Academy of Sciences. Since 1937 he has been a member of the Communist Party of the Soviet Union. He was elected Corresponding Member of the Armenian S.S.R. Academy of Sciences in 1945, Corresponding Member of the U.S.S.R. Academy of Sciences in 1953, and in 1960 Academician. He was acting Academician Secretary of the U.S.S.R. Academy of Sciences 1958-60 and has been Academy Secretary for the division of biological sciences since 1960. Also he has been Chairman of the Soviet delegation to UNESCO. In 1949, the U.S.S.R. Academy of Sciences awarded him the A. N. Bakh Prize and in 1950 the I. I. Mechnikov Prize. He won a Stalin Prize in 1952.

The main scientific investigations of Sisakyan are the study of the action of enzymes in metabolism. While studying the biochemical properties and enzyme functions of sub-microscopic structures of protoplasm, he showed that the plastides are rich not only in nucleoproteins but also in enzymes. He studied the biochemical nature of drought-resistance of plants, the biochemistry of wine production and others.

As of 1961 Sisakyan was Chairman of the Commission on International Scientific Relations of the U.S.S.R. Academy of Sciences.

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Doklady Akad. Nauk S.S.S.R. 147, #3, 731-34 (1962).

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SKOBEL'TSYN, DMITRII VLADIMIROVICH (Physicist)

D. V. Skobel'tsyn was born November 24, 1892. After graduating from Petersburg University in 1915, he worked in the Polytechnic and Physico-Technic Institute in Leningrad. Subsequently he was at Moscow University and the Physics Institute of the U.S.S.R. Academy of Sciences. In 1951 he became Director of this Institute. He was a Corresponding Member of the U.S.S.R. Academy of Sciences from 1939 to 1946 when he was elected Academician. Skobel'tsyn has been active in public affairs also. He was Deputy to the U.S.S.R. Supreme Soviet and a member of the Commission on Foreign Affairs of the Soviet Union. In March 1962, he was re-elected a delegate from Ural SSR to the Supreme Soviet. In 1950 he was made Chairman of the Committee on the International Lenin Prize "For Strengthening Peace Between Peoples." He was awarded a Stalin Prize in 1951 and in 1952 the gold medal of S. I. Vavilov by the U.S.S.R. Academy of Sciences.

Skobel'tsyn carried out research in nuclear physics and cosmic rays. In 1923 he began research on the phenomena of interaction of substance with gamma rays from radium. In order to clarify the mechanism of these phenomena, Skobel'tsyn used the Wilson cloud chamber, with the aid of which he was able to view directly and photograph the recoil electrons knocked out by collisions of high energy photons (gamma rays) with gas atoms which filled the chamber. These studies gave direct support to the quantum character of the Compton effect. Subsequently Skobel'tsyn utilized these phenomena for studies

in gamma rays spectroscopy. The method proposed by Skobel'tsyn of using the Wilson cloud chamber in a magnetic field has been widely used for studying beta and gamma rays spectra and for basic investigations of properties of elementary particles. In 1927-29 Skobel'tsyn studied cosmic rays. In the post war years, he carried out research on the study of cosmic ray showers.

In November 1962 Skobel'tsyn received the Order of Lenin.

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SKRYABIN, KONSTANTIN IVANOVICH (Helminthologist)

K. I. Skryabin was born December 7, 1878. In 1905 he graduated from Yur'ev Veterinary Institute and until 1911 worked as a veterinarian in Central Asia. He was professor at the Don Veterinary Institute in Novocherkassk from 1917 to 1920 when he became professor at Moscow Veterinary Institute (now the Moscow Veterinary Academy). Also in 1920, he was made Chairman of the Helminthological Department of the State Institute of Experimental Veterinary Sciences which he originally organized and then, in 1931, reorganized into the All-Union Institute of Helminthology. Skryabin has been the Director since its founding. He was Chairman in 1921 to 1949 of the Helminthological Department of the Tropical Institute (now the Institute of Malaria, Medical Parasitology and Helminthology) founded by him. In 1942 he became Chief of the Laboratory of Helminthology of the U.S.S.R. Academy of Sciences. Skryabin was elected an Academician of the U.S.S.R. Academy of Sciences in 1939 and in 1944 a member of the U.S.S.R. Academy of

Medical Sciences. In 1943 to 1952 he was Chairman of the Presidium of the Kirghiz Branch of the U.S.S.R. Academy of Sciences. A member since 1935 of the Lenin All-Union Agricultural Academy, he was elected President in 1956. Skryabin is well known for his public activities also. He has been Deputy of the U.S.S.R. Supreme Soviet, second and third convocations. In 1922 he found and chaired the Commission of the Study of Helmintho Fauna of the U.S.S.R. and in 1940 reorganized it into the All-Union Society of Helminthologists of the U.S.S.R. Academy of Sciences of which he is currently President. He participates in domestic and international zoological and veterinary congresses and is a member and honorary member of several foreign scientific research organizations and societies. In 1927 he was an Honored Scientist of the R.S.F.S.R. Twice, 1941 and 1950, he was awarded Stalin Prizes. The Academy of Sciences of the U.S.S.R. awarded Skryabin the Gold Medal of I. I. Mechnikov in 1949. In 1954 he was an Honored Member of the Kirghiz S.S.R. and in 1958 a Hero of Socialist Labor. In 1957 he won a Lenin Prize. The All-Union Institute of Helminthology in Moscow and the Kirghiz Agricultural Institute in Frunze are named for him.

The investigations of Skryabin are in morphology, biology, phylogeny and systematics of parasitic worms, epidemiology (epizootology) and organization of measures to control helminthosis of man and domestic animals. Under the leadership of Skryabin there were conducted about 300 helminthologic expeditions in various regions of the U.S.S.R. He introduced (with R. S. Shul'ts) the concept of additional reservoir and transit hosts and gave an analysis of the processes of migration of various bladder worms in the bodies of a host; he introduced the concept of geo- and biohelminthosis, the concept of dehelminthization, devastation. The many instruction and reference books on control of helminthosis published by Skryabin are widely utilized in medical and veterinary practice. He outlined about 200 new types of bladder worms.

As of 1961, Skryabin was a Vice-President of the Lenin All-Union Agricultural Academy.

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SMIRNOV, NIKOLAI VASIL'EVICH (Mathematician)

N. V. Smirnov was born October 17, 1900. In 1926, he graduated from Moscow University. From 1937 to 1941, he was professor at the Lenin Moscow Pedagogical Institute. In 1938, he began work at the U.S.S.R. Academy of Sciences Institute of Mathematics. He was awarded a Stalin Prize in 1951. He was elected a Corresponding Member of the U.S.S.R. Academy of Sciences in 1960.

Smirnov's work is in the theory of probability and especially mathematical statistics. The theory of non-parametric methods of mathematical statistics was the contribution of Smirnov.

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SMIRNOV, VLADIMIR IVANOVICH (Geologist)

V. I. Smirnov was born January 1910. He graduated from the Moscow Geological Survey Institute in 1934 and was an instructor there. From 1946 to 1951 he was U.S.S.R. Deputy Minister of Geology. At the same time, he was professor at Moscow Geological Survey Institute and at Moscow Institute of Non-Ferrous Metals and Gold. In 1951 he became a professor at Moscow University. He has been a member of the Communist Party of the Soviet Union since 1940. In 1958 he was elected Corresponding Member of the U.S.S.R. Academy of Sciences, and in June 1962, Academician.

Smirnov has worked with problems in the geology of ore deposits, their survey, and evaluation.

In January 1961, Smirnov visited the United States to attend National Academy of Sciences Conferences and meetings at Stanford University, California.

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An Inventory of Natural Resource Mineral Reserves. Moscow: 1950.

The Geological Basis for Surveying and Mining Ore Deposits, 2nd ed. Moscow: 1957.

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SMIRNOV, VLADIMIR IVANOVICH (Mathematician)

V. I. Smirnov was born June 10, 1887 in Leningrad (Petrograd). In 1910 he graduated from Petersburg University, in 1915 he began teaching there, and in 1926 he was made professor. From 1912 to 1930 Smirnov was professor at Petersburg Institute of Engineers of Means of Communication. He received the degree of Doctor in Physical-Mathematical Sciences in 1936. He worked from 1929 to 1935 in the Seismological and Mathematical Institutes of the U.S.S.R. Academy of Sciences. In 1932 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences and in 1943 an Academician. He was awarded a Stalin Prize in 1948.

Smirnov has worked primarily in theory of a function of a complex variable such as the uniformization of the many-valued analytical functions, the investigation of Fuchsian groups and Fuchsian functions in the presence of an infinite number of substitutions of corresponding groups, the reversal of a differential equation of the Fuchsian type with four singular points. In a series of investigations conducted with S. L. Sobolev,

Smirnov worked out a new method of solving some problems on the theory of the propagation of waves in elastic media with plane boundaries. He investigated the singular solutions of a wave equation and the equations for elasticity, and in connection with this, put forth a new method for investigating the oscillations of an elastic circle and sphere for a given external influence. For linear equations of elliptical type, with any number of variables, Smirnov studied cases when these equations allow functionally invariant solutions. This investigation was based on a concept introduced by Smirnov of conjugated function for Euclidian space or Riemannian space with a positive metric. Smirnov is the author of Course in Advanced Mathematics (5 volumes), 1924-47. He trained a large number of students.

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SMIRNOV, VASILII IVANOVICH (Metallurgist)

V. I. Smirnov was born February 11, 1899. After graduating from the Leningrad Mining Institute in 1922, he worked as an engineer in the Katalinskii Copper Works (Urals) and supervised

the reconstruction of the Karabashskii Copper Smelting Plant from 1925 to 1927. In 1927-30, he was chief metallurgist of the Urals Copper Trust (Uralmed) and Deputy Technical Director. In 1930, he was appointed lecturer at the Ural Institute of Non-Ferrous Metals. He became a professor, in 1933, at the Ural Polytechnic Institute. In 1938 he was awarded the degree of Doctor of Technical Sciences. He is the recipient of two Orders of the Red Banner of Labor and a medal for "Valiant Labor during WWII." He was elected to the U.S.S.R. Academy of Sciences as a Corresponding Member in 1946, and became an Academician of the Kazakh S.S.R. Academy of Sciences in 1954.

Smirnov was sent abroad in 1928 on a scientific mission where he became acquainted with the operation of non-ferrous metallurgical plants of the United States and Canada. Upon his return he published a number of studies devoted to the scientific research and practical work of several American and Canadian copper smelting plants.

Smirnov's investigation is in the smelting of copper and nickel ores and concentrates.

Smirnov was an active participant in the Altai Session on the Development of the Productive Forces of this region. He is scientific consultant of the Institute of Metallurgy and Ore-Dressing of the Altai Mining and Metallurgical Institute of the Academy of Sciences of the Kazakh S.S.R.

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SMIRNOV, VASILII SERGEEVICH (Metallurgist)

V. S. Smirnov was born in 1915. He graduated from the Ural Polytechnical Institute in 1937, and in 1937-38 and again in 1941-42, he worked in industry. From 1938 to 1941 he was

an assistant, senior laboratory technician, postgraduate, and from 1942 to 1949 was engaged in scientific and pedagogical work at the Ural Polytechnical Institute. In 1949 he became chairman of the department of Plastic Treatment of Metals at the M. I. Kalinin Leningrad Polytechnical Institute, where he was from 1954-56 deputy Director, and then became Director of this Institute. In 1948, he was granted the degree Doctor of Technical Sciences, and the rank of professor in 1950. Since 1940, he has been a member of the Communist Party of the Soviet Union. He was elected, in 1960, a Corresponding Member of the U.S.S.R. Academy of Sciences.

Smirnov's primary scientific activity deals with pressure treatment of metals (transverse spiral metal rolling, longitudinal periodic rolling, metal punching and pressing).

In June 1958, Smirnov visited the United States to attend the Gordon Research Conferences on Polymer Research at New London, New Hampshire.

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SOBOLEV, SERGEI LVOVICH (Mathematician and Specialist in Mechanics)

S. L. Sobolev was born October 6, 1908 in Leningrad. He graduated from Leningrad University in 1929 and also holds the degree of Doctor of Physical-Mathematical Sciences from there. He then worked in the Seismological Institute of the U.S.S.R. Academy of Sciences. In 1932 he began working at the Mathematics Institute of the U.S.S.R. Academy of Sciences and in 1935 he became professor at Moscow University. Sobolev has been a member of the Communist Party of the Soviet Union since 1940. He was elected a Corresponding Member of the U.S.S.R. Academy of Sciences in 1933 and in 1939 an Academician. In 1941 he was awarded a Stalin Prize.

Sobolev has studied the dynamics of an elastic body. He formulated the theory of plane waves in an elastic semi-space with a boundary free from tension, and elucidated the general concept of a surface wave. Together with V. I. Smirnov, he worked out a new method of investigating the propagation and reflection of elastic waves from rectilinear boundaries—a method which is associated with functionally invariant solutions of wave propagation on a plane. Sobolev also worked out a new method of integrating linear and non-linear equations with partial derivatives of the hyperbolic type. He carried out research on the boundary problem in an n -dimensional space for poly-harmonic equation in the presence of a degenerate boundary; he established an almost-periodic solution of the boundary problems of linear hyperbolic equations, investigated the dependence of the solutions of hyperbolic equations on disturbing forces, initial and final conditions, and solved new boundary problems for these equations. In his investigation Sobolev formulated a series of new concepts; generalized derivative, generalized solution of equations with partial derivatives, generalized differential operator. With the aid of these concepts, he was able to formulate and solve some fundamental problems in mathematical physics. Future development of these ideas of Sobolev led to the establishment of the theory of the so-called generalized functions. Sobolev also studied the properties of functional space.

As of 1961, Sobolev was a Member of the Presidium, Siberian Branch U.S.S.R. Academy of Sciences, and Director of the Institute of Mathematics and Computation Center, Siberian Branch U.S.S.R. Academy of Sciences.

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SOBOLEV, VLADIMIR STEPANOVICH (Petrographer and Mineralogist)

V. S. Sobolev was born May 30, 1908 in the city of Lugansk and spent his childhood in Vinnitsa. In 1930, he graduated from the Leningrad Mining Institute. In 1936, his monograph, "Petrology of the Traprocks of the Siberian Plateau" was accepted as his doctoral dissertation, and he received the title of professor. In 1951, he was elected Corresponding Member of the Ukrainian Academy of Sciences, and on March 28, 1958, he was elected Academician of the U.S.S.R. Academy of Sciences. He is currently a member of the Council and the Editorial Council of the Lvov Geological Society. He received a Stalin Prize in 1949.

Sobolev started his research as a student first in 1928 in the Geological Committee and then in the Central Scientific Research Institute of Geological Survey and the All-Union Geological Scientific Research Institute. He began his investigations in the Ukraine in 1936 and continued them in 1945, following his transfer to the University of Lvov. He has been teaching since 1931. In 1931-41 and 1942-45, he was employed by the Leningrad Mining Institute and in 1939 was made professor. He also taught in the University of Irkutsk from 1941-45. From 1943 to 1945, he served as Director of the Mineralogy Department of the Leningrad Mining Institute and as Director of the Fedorov Institute. In 1945, he joined the University of Lvov as chairman of the Petrography Department. In 1947, he began working at the Institute of the Geology of Minerals in the Ukrainian S.S.R. in Lvov.

Sobolev is the author of over 100 scientific papers dealing chiefly with three subjects: petrography and mineralogy of Siberia, petrography and mineralogy of the Ukraine, and theoretical aspects of mineralogy and petrography. He has devoted many years to the study of the traprock of the Siberian Plateau. He demonstrated that the formation of various rock minerals is associated with the crystallization differentiation whose sensitive index is the $\text{FeO}:\text{MgO}$ ratio. His study of the mineralogy of Siberia gave the first description of a rare paragenesis of the contact calcium silicates—spurrite, merwinite, cuspidine. In addition, he has discovered and described the magnetite deposits in the Ilimpeya River.

In his monograph on traprock, Sobolev furnished a survey of the corresponding formations of the earth's crust, stressing the similarity of the Siberian plateau geology to that of the Karoo plateau (South Africa). This analogy became more conclusive

when in 1937, having analyzed some petrographic samples collected by N. N. Urvantsev from the Taimir Peninsula, he succeeded in finding a unique basic rock resembling the ultrabasic type. He concluded that this rock may be an analog of the South African basic formations (melitite basalts) which accompany the kimberlites. He also advanced the hypothesis concerning the diamond-bearing potential of the northern Siberian plateau. This hypothesis was confirmed first through the study conducted jointly with A. P. Burov of the geology of diamond deposits in foreign countries, and by the discovery of extensive areas of basic volcanic rocks in Khatangi District. Rock samples from this district were collected by members of the Arctic Institute Expedition and tested by G. G. Moor in consultation with Sobolev, whereupon Moor confirmed the hypothesis on the occurrence of diamonds. In his report for 1940 to Gosplan S.S.S.R. (State Planning Committee of the U.S.S.R. Council of Ministers) he wrote: "The Siberian plateau has the greatest coincidence with the kimberlite deposits of South Africa. This coincidence is amplified even more by the discovery by the author, on the Taymir Peninsula, and by G. G. Moor (in consultation with the author) in the Khatangi River area, of basic rocks of the limburgite, augite, and alnoite type, resembling the South African melitite basalts which accompany kimberlites. Each expedition operating in the northern Siberian plateau should give serious attention to prospecting for diamonds. It is especially important to diamond prospecting in the active placers of precious metals in the Norilsk area and in Vilyuy." Thus, V. S. Sobolev predicted the location of diamond kimberlites not only in the northern Siberian plateau generally, but also in the Vilyuy area in particular.

After the discovery of kimberlites, Sobolev was invited to take part in the expedition. He paid visits to diamond deposits (1955), advised in petrographic and mineralogical analysis of the materials, and jointly with A. P. Burov served as the scientific editor of the first book on diamonds in Siberia.

Of Vladimir Stepanovich's writings on the petrography of the Ukrainian S.S.R., one must mention first of all the monograph on the petrology of the complex Korosten pluton which he feels to have a direct connection with the petrology of traprock formations. In this book the author once again stresses the importance of the study of femic minerals of magmatic rocks. He distinguishes the most important differences between the plateau type of granites and those of folded areas, which are the result of varying ferruginosity in femic minerals. He was the first to

find basic syenites and new deposits of piezo-electric crystals in this region of the Ukraine.

In post-war years, Sobolev has devoted much of his time to the study of young volcanic rocks in the Carpathian Mountains. Explorations in this region are being conducted jointly with a group of his students. In his writings on the mineralogy and petrology of the Ukrainian S.S.R. he described the ultra-basic rocks of Transcarpathia and established, within the metamorphic complex of this region, the occurrence of diaphoresis; he has described a new find of pumpellyite from the Carpathian Mountains, pointing out the identity of this mineral to lotrite and others.

Sobolev is not only a petrographer but a mineralogist as well. He has published since 1944 a series of articles on the theoretical mineralogy of silicates, and in 1949 a book entitled *Introduction to the Mineralogy of Silicates* which was awarded a Stalin Prize, Second Class. In this treatise he attempted to make an interrelationship between the properties and genesis of minerals, on the one hand, and silicates and their crystal structure on the other. He has established a connection between the difference in ionic radii in isomorphic series and the type of fusibility curves; substantiated A. E. Fersman's ideas respecting the regularity of isomorphism; determined the relationship between the change in the coordinate number of aluminum during mineral formation and the physico-chemical equilibrium factors; clarified the relationship between the optical properties of silicates, including their color, and their structure. Moreover, he has generalized the data of paragenesis of igneous rocks in the form of multi-fascicular diagrams.

Certain structural features of various silicates, which had been predicted by V. S. Sobolev on the basis of mechanisms which he had evolved, have been verified by X-ray analysis. Thus, for example, the investigations conducted by N. V. Belov and I. M. Rumanova have corroborated his hypothesis concerning both the six-fold coordination of aluminum in epidote and the presence of a diortho group in the latter. Studies by Chinese authors have supported his hypothesis concerning the two types of coordination of aluminum in prehnite and others. ite and others.

Maintaining in his studies that hydroxyl in many silicates cannot substitute oxygen in oxysilicic tetrahedrons, V. S. Sobolev proposed in this connection a new way of computing the crystallo-chemical formulas of water-containing silicates. In 1949, he was the first to advance the hypothesis concerning the

substitution of the potassium ion in micas with the oxonium ion. Sobolev has written a number of articles on theoretical petrography: metamorphism, formation of igneous rocks, granitization, genesis of lamprophyres, mineral formation at oriented pressure. He stresses the importance of studying femic minerals of rocks and proposes certain simplified diagrams which facilitate the approximate determination of biotite and hornblende (by their optical properties) in granitoids. Of special value are the tables of optical orientation of minerals which have been published as a supplement to the text *Fedorov Method*.

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SOBOLEV, VICTOR VICTOROVICH (Astronomer)

V. V. Sobolev was born September 2, 1915. In 1938 he graduated from Leningrad University. From 1941 he worked there, becoming a professor in 1948. He was elected, in 1958, a Corresponding Member of the U.S.S.R. Academy of Sciences.

Sobolev has worked in theoretical astrophysics. He has been concerned with physics of non-stationary stars and the theory of radiative transfer. He presented a theory on the luminosity of moving media, with the help of which he established the physical relationship of giant stars of early and late spectrum classes. He laid the basis for the theory of a non-stationary radiation field. He put forth a theory of shape of spectrum lines with consideration of frequency redistribution.

Sobolev's works are also concerned with the physics of gaseous mistiness, and investigation of planetary atmospheres.

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SOTCHAVA, VIKTOR BORISOVICH (Geobotanist and
Geographer)

V. B. Sotchava was born June 20, 1905. In 1924, he graduated from the Leningrad Agricultural Institute where he worked until 1926. From 1926 to 1936, and since 1943, he has been working at the U.S.S.R. Academy of Sciences Botanical Institute. He worked, in 1931-1935, at the Institute of Reindeer Breeding at the Lenin All-Union Academy of Agricultural Sciences. From 1935 to 1938, he was Chairman of the Department of Reindeer Breeding of the Arctic Institute. He taught at the A. I. Gertsen Pedagogical Institute in Leningrad from 1939 to 1950. Since 1938, he has been teaching at Leningrad University where he became a professor in 1944. He has been the recipient of several medals and the Order of Lenin. In 1958, he was elected to the U.S.S.R. Academy of Sciences as a Corresponding Member.

Sotchava has studied vegetation, landscapes of various zones of the U.S.S.R. Beginning in 1926, he took part in expeditions to the Far North, the Far East, Siberia, Urals, Caucasus, Carpathians, Moldavia and China, Rumania and Czechoslovakia. In a series of botanical-geographical outlines, he presented data on the vegetation of previously unexplored territories such as basins of the Anadyr, the Penzhin, and North Sikhote-Alin. He studied pastures of the Tundra zone, proposed some measures for organizing a food base for Soviet reindeer breeding. He studied the relationship between the forest and Tundra vegetation. He proposed a scheme of classifying vegetation based on ecologo-geographical and genetic factors and developed principles of classification of geobotanical and landscape sections. He published a summary work on the forest vegetation of the U.S.S.R. A series of his works deal with questions of paleography and the history of contemporary vegetation of the Far East, of polar countries, the Caucasus, of North and Central Siberia. He directed the compilation of a series of maps, the main among which is the "Geobotanical Map of the U.S.S.R." (scale 1/4,000,000) and the explanatory text to it.

Since 1950 Sotchava has been working out theoretical and methodical aspects of vegetation mapping and problems of comprehensive mapping of geographical environment. These problems were elucidated in several articles and reports read in the U.S.S.R. and at international symposiums. In 1960 Sotchava was honored with a silver medal of Pierre Fermat by the Academy of Sciences, Inscriptions and Literature in Toulouse (Academie des sciences, inscriptions et belles-lettres de Toulouse).

As of 1960, Sotchava has been Director of the Institute of Geography of Siberia and the Far East, Irkutsk, Siberian Department, U.S.S.R. Academy of Sciences. He is also the Head of the Laboratory of the Geography and Cartography of the vegetation of the V. L. Komarov Institute of Botany of the U.S.S.R. Academy of Sciences, Leningrad.

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SOKOLOV, BORIS SERGEEVICH (Geologist and Paleontologist)

B. S. Sokolov was born April 9, 1914. After graduating from Leningrad University in 1937, he worked at the University. In 1943 he began working at the All-Union Scientific Research Oil Institute. Since 1958 he has been a Corresponding Member of the U.S.S.R. Academy of Sciences.

Geological investigations were conducted by Sokolov in the pre-Moscow basin and Tien Shan (until 1940), in middle and central Asia (1941-45), in various regions of the European section of the U.S.S.R. and on the Urals (1946-53), and in Siberia (from 1956). He has studied the stratigraphy of Paleozoic and late pre-Cambrian regional and oil geology. In the area of paleontology he investigated Paleozoic corals, established the separation of tabulate corals as a particular subclass of higher polyps, formulated their new phylogenetic system, and established their stratigraphic significance.

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SOKOLOVSKII, VADIM VASIL'EVICH (Mechanical Engineer)

V. V. Sokolovskii was born October 17, 1912. In 1933 he graduated from the Moscow Institute of Construction Engineers. From 1936 to 1939 he worked at the Mathematics Institute, and since 1939, at the U.S.S.R. Academy of Sciences Institute of Mechanics. He became a professor in 1940. He was awarded, in 1943 and in 1952, Stalin Prizes. Since 1956 he has been a member of the Communist Party of the Soviet Union. In 1946 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences.

The main works of Sokolovskii are devoted to the theory of shells, statics of a loose medium and to theory of plasticity. He obtained solutions to many problems of plane deformed conditions such as compression of plastic masses, pressing in of punches, drawing of plastic strips. He developed the theory of a plane plastic tense condition, and proposed new methods for solving problems of plasticity in an analytical form. He developed a general method which allows solution of the main problems of plane terminal equilibrium of loose and cohesive media (the supporting power of bases, the form of stable slopes, pressure on bulkheads).

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SOTSKOV, BORIS STEPANOVICH (Automation Specialist)

B. S. Sotskov was born in 1908. In 1931 he graduated from the Military Technical Academy. From 1931 to 1938, he was

laboratory Chief, senior instructor, and departmental Chairman of the Military Electro-technical Academy in Leningrad. He was docent, 1938-42, at the Leningrad Polytechnical Institute. From 1942 to 1960, he held positions as senior scientific worker, laboratory supervisor and deputy Director respectively of the U.S.S.R. Academy of Sciences Institute of Automation and Remote Control where he became Chief of the Laboratory in 1960. In the same year he was elected to the U.S.S.R. Academy of Sciences as a Corresponding Member.

Sotskov's principal work has been in the field of elemental and technical media of automation and remote control.

Sotskov visited the United States in November 1961 to study automatic controls.

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SPERANSKII, GEORGI NESTOROVICH (Pediatrician)

G. N. Speranskii was born February 20, 1873. He graduated from the University of Moscow in 1898 and worked there until 1909. In 1934 he was awarded the title Honored Scientist of the R.S.F.S.R., and Hero of Socialist Labor in 1957. He was elected

to the U.S.S.R. Academy of Sciences as a Corresponding Member in 1943, and became an active member of the U.S.S.R. Academy of Medical Sciences in 1944.

Speranskii founded in 1910 the first hospital in Moscow (with a clinic, consultation and milk kitchen) for infants. From 1922, he carried out his scientific work at the Central Scientific Research Institute for the care of mothers and infants; directed that institute (which later was reorganized into the Institute of Pediatrics) from 1925-30. At the same time he was president of the Central Institute for the Advancement of Doctors and in 1934 became professor there.

Speranskii's work is devoted to acute and chronic disturbances, digestion and acute gastric ailments in young children. He applied rational diethotherapy for dysentery. He devoted much time to the problem of pneumonia, grippe and septics in the newborn. He has also worked on pathology in older children, particularly rheumatism. He has organized and participated in many conferences on pediatricians, and has published numerous articles on this subject.

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Biography:

G. N. Speranskii. Problems of Pediatrics, 1951. Collection of works devoted to 50 years of scientific pedagogy and social activity.

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SPITSYN, VIKTOR IVANOVICH (Chemist)

V. I. Spitsyn was born April 25, 1902. He graduated from Moscow University and taught there until 1931. In 1932 he was made professor at the K. Liebknecht Moscow Pedagogical Institute and in 1942 he became professor at Moscow University.

He was appointed, in 1949, Chief of the Laboratory of Biochemistry of the Institute of Physical Chemistry of the U.S.S.R. Academy of Sciences, and in 1953, Director of this Institute. In 1941 he became a member of the Communist Party of the Soviet Union. He was a Corresponding Member of the U.S.S.R. Academy of Sciences from 1946 until 1958 when he was elected an Academician.

Spitsyn's main investigations are in the chemistry of rare elements and in radiochemistry. He showed the reversibility of reactions of chlorination of oxides at high temperature and determined the cause of "sublimation" of some oxides in the atmosphere of chlorine or hydrogen chloride. He investigated thermal stability of alkaline salts of some oxyacids such as tungstates and sulfate, and their volatility in various gaslike media. He investigated the chemistry of heteropoly compounds, and utilized "tagged atoms" in this investigation.

In March 1958, Spitsyn visited the United States to attend the International Atomic Exposition in Chicago, Illinois.

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Das Chlorieren von Oxyden und ihren Gemischen mit Kohlenstoff. Leipzig: 1930.

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SPIVAKOVSKII, ALEKSANDR ONISIMOVICH (Transport Engineer)

A. O. Spivakovskii was born January 29, 1888. In 1917 he graduated from Petrograd Polytechnical Institute. In 1919 he

taught at the Dnepropetrovsk Polytechnical Institute and from 1921 to 1923 at the Dnepropetrovsk Mining Institute. In 1933 he became a professor at the Moscow Mining Institute. Since 1949, he has been working at the Moscow Mining Institute of the U.S.S.R. Academy of Sciences. He became a member of the Communist Party of the Soviet Union in 1941. He was elected, in 1946, a Corresponding Member of the U.S.S.R. Academy of Sciences. He was awarded a Stalin Prize in 1947.

Spivakovskii has worked in mining transportation. Together with others he participated in improving scraper conveyers and methods of transporting coal in long drifts in the mines of the Donbas (Stalin Prize 1947).

Bibliography:

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Cable Conveyers. Moscow: 1951.

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SRETENSKII, LEONID NIKOLAEVICH (Mathematician)

L. N. Sretenskii was born February 27, 1902. In 1923 he graduated from Moscow University where he became a professor in 1934. In 1936, he was granted the degree of Doctor of Physico-Mathematical Sciences. From 1931 to 1941, he worked at the Central Aero-Hydrodynamics Institute. In 1951, he started to work at the U.S.S.R. Academy of Sciences Marine Hydro-physical Institute. He was elected, in 1939, a Corresponding Member of the U.S.S.R. Academy of Sciences.

The main works of Sretenskii deal with the theory of liquid wave movements, the tidal waves, waves of terminal amplitude, ship waves, and oscillation of liquid in containers. He has investigated the theory of figures of equilibrium of a rotating liquid, streamlining by gas flow, the movement of a heavy solid body around a fixed point, specific equations of mathematical

physics, integral equations and differential geometry. Sreten-skii's work has been applied in shipbuilding, geophysics and applied marine science.

Bibliography:

Theory of Wave Movements of a Liquid. Moscow-Leningrad: 1936.

Theory of Newton's Potential. Moscow-Leningrad: 1946.

Theory of tides of long periods. Izvest. Akad. Nauk, Georg. i Geofiz. Ser., 1947, 11, #3.

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Space problem of settled waves of terminal amplitude. Moscow University Vestnik, 1954, #5. (Series of Physico-Mathematical and Natural Sciences, #3.)

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STARIK, IOSIF EVSEEVICH (Chemist)

I. E. Starik was born March 23, 1902. He was a student of V. I. Vernadskii (1863-1945, biogeochemist) and V. G. Khlopin (1890-1950, chemist in radioactivity). After graduating from Moscow University in 1924, Starik worked at the Institute of Radium. In 1946 he became professor at Leningrad University and deputy Director of the Radium Institute of the U.S.S.R. Academy of Sciences. Since 1946 he has been a Corresponding Member of the U.S.S.R. Academy of Sciences.

The studies of Starik deal with the investigation of colloidal conditions of radioelements in connection with their absorption properties, determination of geological age by radioactive methods, the study of conditions for the migration of radioelements and development of radiochemical analysis.

As of 1961, Starik was Chairman of the Commission on Absolute Age of Geological Formations, U.S.S.R. Academy of Sciences.

Bibliography:

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STECHKIN, BORIS SERGEEVICH (Heat and Aeronautical Engineer)

B. S. Stechkin was born July 24, 1891. In 1918 he graduated from Moscow Higher Technical School. He was a student of N. E. Zhukovskii, the founder of Russian aviation, and with him helped found the Central Aerodynamic Institute. Stechkin is one of the organizers of the Aeronautical Engineers' Academy in Moscow where he became a professor in 1921. From 1918 to 1929 he also taught at the Moscow Higher Technical School and from 1933 to 1937 at the Moscow Aviation Institute. In 1954 he was made Director of the Engine Laboratory of the U.S.S.R. Academy of Sciences. He was elected a Corresponding Member of the U.S.S.R. Academy of Sciences in 1946, and in 1953 an Academician.

Stechkin calculated the heat balance for aviation engines and developed methods for constructing aviation engines with rapid and cool characteristics. He derived formulae for the calculation of air intake in aircraft engines, and for defining the coefficient of air filling and indicator of useful work of aircraft engines. In 1929, he published "A Theory of Jet Engines" which presented a theory of jet propulsion. In technology, he further improved the theory of jet engines and facilitated the development of their characteristics.

Bibliography:

Aviation Engines, I. Moscow: 1922.

On the heat calculus of engines. *Air Force Technology*, 1927, #2.

A Conspectus of Lectures on the Theory of Turbo-Compressors. Moscow: 1944.

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Akademik B. S. Stechkin. Air Force Journal, 1954, #2.

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STRAKHOV, NIKOLAI MIKHAILOVICH (Geologist)

N. M. Strakhov was born April 15, 1900. In 1928 he graduated from Moscow University. He began working in 1934 at the Geological Institute of the U.S.S.R. Academy of Sciences. In 1953 he was made a member of the main editorial staff of the Bol'shaya Sovetskaye Entsycl. (Great Soviet Encyclopedia). He was elected a Corresponding Member of the U.S.S.R. Academy of Sciences in 1946, and in 1953 an Academician. In 1948 he was awarded a Stalin Prize.

Strakhov's scientific activity is in the field of modern deposits, ancient sedimentary rock—iron ore, lime-dolomitic rocks, oil shale, halogen deposition, and of the geochemistry of iron, manganese, phosphorus, vanadium, chromium, nickel, and a series of other elements. Continuing the work of his teacher, A. D. Arkhangel'skii (1879-1940, geologist, professor at Moscow University, and Academician), Strakhov developed and established a comparative method of analysis in lithology. A study of contemporary reservoirs (Black and Caspian Seas, Lake Aral, Balkash and others) was made and an exact analysis of contemporary sedimentation was presented. He studied the role of diagenesis in the formation of sedimentary rock. He published monographs on iron ore and lime-dolomitic species of modern and ancient reservoirs and discovered new regularities in the formation of iron and carbonate rocks. He defined the characteristics of sedimentation by the main structural units of the earth's crust—platforms, geosynclines and the foremost depressions. He suggested a scheme of irreversible evolution in sedimentary rock formation during the history of the earth, and indicated three important stages: Pre-Cambrian, the Proterozoic-lower Paleozoic, and the modern (from the Devonian to the present). In addition, he associated the periodic recurrence of similar rocks with the recurrence of major transgressions and regressions of the sea. Recently he

has advanced the idea that four types, ice, humid, arid and sedimentary, are involved in sedimentary rock formation.

In 1960 Strakhov was awarded the Red Banner of Labor.

Bibliography:

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STRELETSKII, NIKOLAI STANISLAVOVICH (Structural Engineer)

N. S. Streletskii was born September 14, 1885. In 1911 he graduated from the Petersburg Institute of Engineers of Communication Lines. In 1915 he taught at the Moscow Technological College where he became a professor in 1918. In 1933 he was made a professor at the Moscow Institute of Construction Engineers. He has been a member of the U.S.S.R. Academy of Construction and Architecture since 1956, and was elected to the U.S.S.R. Academy of Sciences as a Corresponding Member in 1931. In 1944 he was awarded the title of Honored Scientist of the R.S.F.S.R.

In 1918-30 Streletskii organized and directed experimental investigations of bridge structures. He is the author of a static theory of the construction safety factor, the study of processes of destruction of steel structures and other questions

of supporting power of structures as a whole. He has developed theories of calculating structures and established a scientific basis for standardization of transportation and industrial structures.

Bibliography:

Methods of Calculating Non-Prop Beams with Parallel Belts and a Junction Load. St. Petersburg: 1913.

Laws on Changing of Weight on Metal Bridges. Moscow: 1926.

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Biography:

Nikolai Stanislavovich Streletskii. Moscow: 1946 (contains list of works of Streletskii).

Nikolai Stanislavovich Streletskii (Anniversary of the scientist). Prikl. Mekhanika, 1956, 2, #2.

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STRELKOV, PETR GEORGIEVICH (Physicist)

P. G. Strelkov was born in 1899. In 1924 he graduated from Leningrad Industrial Institute. He was engaged in scientific research, 1923-26, in Leningrad, and in 1936-56 he was a senior scientific worker and then laboratory supervisor at the U.S.S.R. Academy of Sciences Institute of Physical Problems. From 1956 to 1959 he was deputy Director and subsequently laboratory supervisor of the All-Union Institute of Physico-Technical and Radiotechnical Measurements of the Commission on Measurements and Measuring Instruments. In 1959 he became a departmental Chairman of the U.S.S.R. Academy of Sciences Siberian Branch Institute of Thermal Physics. He was elected, in 1960, a Corresponding Member of the U.S.S.R. Academy of Sciences. In 1943 he was the recipient of a Stalin Prize.

Strelkov's works are primarily concerned with research in thermal and molecular processes.

Bibliography:

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STRUMINSKII, VLADIMIR VASIL'EVICH (Mechanical Engineer)

V. V. Struminskii was born April 29, 1914. He graduated from Moscow University in 1938. In 1941 he began working at the Central Aero-Hydrodynamics Institute. He was elected, in 1958, to the U.S.S.R. Academy of Sciences as a Corresponding Member. In 1947 and 1948 he received Stalin Prizes.

Struminskii's main works deal with aerodynamics. He formulated a theory of a boundary layer on a sliding wing (1946), the general theory of a non-stationary boundary layer (1948) and the general theory on three-dimensional boundary layer for an arbitrary surface (1952).

Bibliography:

Sideslip of the wing in a viscous and compressed gas. *Doklady Akad. Nauk S.S.S.R.*, 1946, 54, #9.

Sideslip of a wing in a viscous liquid. *Doklady Akad. Nauk S.S.S.R.*, 54, #7.

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Theory of a space boundary layer on a sliding wing. Collection of Theoretical Works on Aerodynamics. Moscow: 1957.

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STYRIKOVICH, MIKHAIL ADOL'FOVICH (Heat Engineer)

M. A. Styrikovich was born November 16, 1902. He graduated in 1927 from the Leningrad Technological Institute. From 1928 to 1945 he worked at the Leningrad Province Scientific Research Power Engineering Institute (now the Central Boiler-Turbine Institute). He has also worked at the Institute of Energetics of the U.S.S.R. Academy of Sciences from 1938 and from 1939 at the Moscow Institute of Energetics. Since 1946 he has been a Corresponding Member of the U.S.S.R. Academy of Sciences.

Styrikovich worked on diesel generator units and steam boiler processes and studied the movement of a steam mixture through pipes and the heat transfer to a boiling liquid under high pressure. He investigated the separation of steam and the solubility of salts in high pressure steam. Styrikovich assisted in establishing standards for heat and aerodynamic calculations of boiler units.

In November 1962, Styrikovich was awarded the Order of the Red Banner of Labor.

Bibliography:

and others. Course on Steam Boilers. Part 1-2. Leningrad-Moscow: 1934-39.

Hydrodynamics and heat exchange in steam boilers and their influence on the internal boiler physico-chemical processes. Internal Boiler Physico-Chemical Processes. Moscow-Leningrad: 1951.

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and others. Generation of Steam of Super High Parameter. Moscow: 1950.

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Biography:

On the 50th Anniversary of the Corresponding Member of the U.S.S.R. Academy of Sciences, M. A. Styrikovich. Boiler-Turbine Construction, 1953, #1.

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SUBBOTIN, MIKHAIL FEDOROVICH (Astronomer)

M. F. Subbotin was born June 28, 1893. In 1914, he graduated from the University of Warsaw. In 1930, he became a professor at Leningrad University. From 1922 to 1930, he was Director of the Taskhent Observatory. He became, in 1942, the Director of the U.S.S.R. Academy of Sciences Institute of Theoretical Astronomy. He was elected a Corresponding Member of the U.S.S.R. Academy of Sciences in 1946.

Subbotin has determined the orbits of planets and comets, investigated the general properties of motion of n-bodies, and improved convergence of basic series used in celestial mechanics. He is the author of a three volume Course on Celestial Mechanics (1933-49) in which all basic sections of celestial mechanics were presented for the first time in the Russian language.

Bibliography:

Determination of singular points of the analytical function. Mathematical Collection, 1916, 30, #3, 402-433.

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Course on Celestial Mechanics, 1, 2nd ed. Leningrad-Moscow: 1941; 2-3, Leningrad-Moscow: 1937-49.

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SUKACHYEV, VLADIMIR NIKOLAEVICH (Botanist)

V. N. Sukachyev was born June 7, 1880. He graduated from the Forestry Institute in Petersburg in 1902 and worked as an assistant at the University. From 1912 to 1918 he was a junior botanist at the Botanical Museum of the Petersburg Academy of Sciences. He was a professor at the Institute of Forestry (later Forest-Technical Academy) 1919-1941, at the Graphic Institute 1918-1925, and at Leningrad University 1925-1941. In 1924 to 1926, Sukachyev was Chairman of the Acclimatization Department of the Department of Geobotany, and in 1931 to 1933 of the Main Botanical Garden of the U.S.S.R. Academy of Sciences. He moved to Moscow in 1944 and became Director of the Institute of Forestry of the U.S.S.R. Academy of Sciences. He was professor at the Moscow Forest-Technical Institute 1944-1948 and at Moscow University 1948-1951. Sukachyev was elected a Corresponding Member of the U.S.S.R. Academy of Sciences in 1920, and in 1943 an Academician. Since 1937 he has been a member of the Communist Party of the Soviet Union. In 1916 he was a member-founder and then became President in 1946 of the All Union Botanical Society. He has been President (1955) of the Moscow Society of Naturalists, and Honored Member of the All Union Botanical Society and the Geographic Society of the U.S.S.R. The Geographical Society awarded him prizes four times, 1912, 1914, 1929, 1947. In 1951 he was awarded a Gold Medal of V. V. Dokuchaev by the U.S.S.R. Academy of Sciences.

Sukachyev conducted many expeditions for studying the vegetation of various regions of the country. He spent much time in studying swamps and worked out the theory of the formation of swamps which he presented in a book (Swamps: their Formation, Development and Character, 1914). He also studied the vegetative cover, working in phytocoenology. In geography, Sukachyev advocated a wide complex approach to the study of natural phenomena and in particular to vegetation. In paleo-botany, Sukachyev developed spore-pollen analysis for studying post-glacial and mid-glacial deposits of the U.S.S.R. In the study of forests, he proposed methods of characterization of types of

forests. He also has worked in systematics of wood (larch, birch, willow) and obtained a series of valuable sorts of willows. Scientific research on protective forest growing has been conducted under his leadership since 1949. He is the author of a series of textbooks and handbooks on dendrology, geobotany, the study of vegetation and especially on the study of the types of forests, and also work on some questions of Darwinism.

In 1960 Sukachyev was named an Honored Scientist of the R.S.F.S.R.

As of 1961, Sukachyev has been Chairman for the Study of the Quaternary Era, Moscow, Academy of Sciences U.S.S.R.

Bibliography:

V. B. Sochava. Creative path of V. N. Sukachyev and his role in the development of geobotany and study of the land-scale (on the 75th Anniversary since date of birth, and the 55th Anniversary of scientific activity). Proceedings of the All-Union Geographic Society, 1955, 87, #5.

To Academician V. N. Sukachyev on the 75th Anniversary since the date of birth. Collection of Works on Geobotany, Forestry, Paleogeography and Flora. Moscow-Leningrad: 1956.

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SVETOVIDOV, ANATOLI NIKOLAEVICH (Ichthyologist)

A. N. Svetovidov was born November 3, 1903. He graduated in 1925 from the Faculty of Fisheries of the Moscow Agricultural Academy of K. A. Timiryazev. In 1932 he began work at the Institute of Zoology of the Academy of Sciences U.S.S.R., Leningrad. He has been a doctor and professor since 1928 and a Corresponding Member of the U.S.S.R. Academy of Sciences since 1953.

Svetovidov's work is concerned with the classification, morphology, geographical distribution, and historical origin of fish.

Bibliography:

Materials on classification and biology of umber of the Lake Baikal. Trudy of the Baikal Limnological Station, 1931, 1.

Gadoid Fishes. Moscow-Leningrad: 1948. Fauna of the U.S.S.R., Fishes, Vol. IX, #4.

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Codfish brain. Trudy Zoo. Inst. Akad. Nauk, 13, 1950.

Pt. II. Structure of herring brain. Trudy Zoo. Inst. Akad. Nauk, 21, 1955.

SYRKIN, YAKOV KOVOVICH (Physical Chemist)

Ya. K. Syrkin was born December 5, 1894. In 1919 he graduated from the Ivanovo-Voznesensk Polytechnical Institute, where he taught as a professor beginning in 1925. Since 1931, Syrkin has been professor at the Institute of Fine Chemical Technology. While at Karpov Physico-Chemical Institute, he organized a department on molecular structure. From 1931 to 1952, he was scientific chairman of this department. In 1943, he was elected to the U.S.S.R. Academy of Sciences as a Corresponding Member. He was awarded a Stalin Prize in 1943.

The works of Syrkin are concerned with chemical thermodynamics, kinetics of reactions in solutions, the mechanism of Menshutkin reactions in solutions and in a gas phase, and in particular, the study of molecular structure and chemical bonds. He applied dipole moments in investigating molecular structure and measured dipole moments for 500 substances. He investigated mechanisms of chemical reactions with the aid of labeled atoms, and intermolecular interaction by dielectric polarization.

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TALMUD, DAVID L'VOVICH (Physical Chemist)

D. L. Talmud was born October 24, 1900. He graduated in 1923 from the Odessa Chemical Institute, and until 1925 taught at the Odessa University. In 1930 he went to work at the Leningrad Institute of Chemical Physics. Beginning in 1934, he was at the Institute of Biochemistry, U.S.S.R. Academy of Sciences. Talmud was elected in 1934 a Corresponding Member of the U.S.S.R. Academy of Sciences. He has been a member of the Communist Party of the Soviet Union since 1940. In 1943 he received a Stalin Prize.

Talmud worked in physical chemistry of surface layers and colloidal chemistry. He has also investigated the structure of protein. Along with his scientific theoretical investigations, Talmud has worked on problems connected with industry.

Talmud is a member of the I. P. Pavlov Institute of Physiology, Leningrad, U.S.S.R. Academy of Sciences, as well as a member of the Institute of Biochemistry.

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TAMM, IGOR' EVGEN'EVICH (Physicist)

I. E. Tamm was born July 8, 1895. He graduated from Moscow University in 1918 and then taught at several universities. From 1924 to 1941 and again in 1954, he was at Moscow University. Beginning in 1934, he has worked at the Physics Institute of the U.S.S.R. Academy of Sciences. Tamm was a Corresponding Member of the U.S.S.R. Academy of Sciences from 1933 until 1953 when he was elected an Academician. He was a Hero of Socialist Labor. In 1958 he received a Stalin Prize and also the Nobel Prize. All of Tamm's students are well known physicists and theoreticians.

Tamm's theoretical investigations are in quantum mechanics and its applications, in radiation, in cosmic rays, and interaction of nuclear particles. In 1932 he formulated a quantum theory on the scattering of light in solid bodies and developed the relativistic quantum mechanics theory of light scattering by electrons. In the quantum theory of metals, Tamm and S. P. Shubin gave a theory of the photoeffect in metals in 1931. In 1932 he predicted the existence of special surface states of electrons on crystals known as the Tamm levels. In 1934 he developed mathematically a quantitative theory of nuclear forces based on exchange interaction of electrons and neutrinos. In 1937 he and I. M. Frank worked out the theory of Cherenkov effect, the radiation emitted by a rapidly moving electron. For this work he received the Nobel Prize. In 1945 he gave an approximate method for calculating the interaction of nuclear elementary particles. Tamm, with A. D. Sakharov, proposed in 1950 the utilization of an electric discharge in plasma, which is placed in a magnetic field, for obtaining a controlled thermonuclear reaction. Tamm is the author of a textbook, *Basis of the Theory of Electricity* (1929, 6th ed., 1956).

Tamm has attended the Pugwash Conferences.

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Biography:

V. L. Ginzburg and E. L. Feinberg. Igor Evgen'evich Tamm (On the 60th Anniversary since the date of birth). *Uspekhi Fiz. Nauk*, 1955, 56, #4 (contains list of works of Tamm).

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TANANAEV, IVAN VLADIMIRIVICH (Chemist)

I. V. Tananaev was born June 4, 1904. In 1925 he graduated from Kiev Polytechnical Institute where he continued to work until 1934. He was appointed, in 1939, Chief of the Laboratory and, in 1949, Chief of the Department in the Institute of General and Inorganic Chemistry of the U.S.S.R. Academy of Sciences. From 1948 to 1954 he was Deputy Director of this Institute. In 1942 he became a member of the Communist Party of the Soviet Union. He was a Corresponding Member of the U.S.S.R. from 1946 to 1958 when he became an Academician.

Tananev worked primarily in the fields of analytical and inorganic chemistry, especially in the study of fluorides, ferrocyanides of various metals, and also compounds of rare elements. He applies the physico-chemical methods for solving problems of analytical chemistry.

In May 1960, Tananaev visited the United States and was at the National Bureau of Standards on an exchange program.

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On the solubility in an ice region in a triple system $KF - HF - H_2O$. *Proc. Acad. Sci. U.S.S.R., Sect. Phys. & Chem. Anal.*, 1941, 14.

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Investigation of the system $K_2PdCl_4-KIH_2O$ according to the method of light absorption. Zhur. Anal. Khim., 1948, 3, #5. with N. V. Bausova. Study of chemistry of fluorides of gallium and their utilization for separating gallium from other metals. Khim. Redkikh El., #2. Moscow: 1950.

Biography:

Ivan Vladimirovich Tananaev (to the 50th Anniversary since date of birth). Zhur. Anal. Khim., 1954, 9, #4.

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TATARINOV, PAVEL MIKHAILOVICH (Geologist)

P. M. Tatarinov was born November 6, 1895. He graduated in 1925 from the Leningrad Mining Institute. In 1924-49, he worked in the Geological Committee (The All-Union Scientific Research Geological Institute) and in 1954 he began working there again. He went to teach at the Leningrad Mining Institute in 1930 and in 1940 was made professor. Since 1953 he has been a Corresponding Member of the U.S.S.R. Academy of Sciences.

Tatarinov has studied ore deposits and non-metallic industrial minerals of the U.S.S.R., particularly of the Urals.

Bibliography:

Materials for Knowledge of the Deposits of Chrysotile-Asbestos of the Bazhenovsk Region of the Urals. Leningrad: 1928 (Works of the Geological Committee. New series, #185). and others. Alapaevsk Intrusion of Ultrabasic Rock of the Urals and Chromite Deposits in It. Moscow-Leningrad: 1940 (Works of the Central Scientific Research Institute of Geologic Prospecting, #120). and others. Course on Deposits of Commercial Minerals, 2nd ed. Moscow-Leningrad: 1946.

Conditions in the Formation of Deposits of Ore and Non-Metallic Commercial Minerals. Moscow: 1955.

and others. Course on Non-Metalliferous Deposits, Part 1-2. Moscow-Leningrad-Novosibirsk: 1934, 1935.

Biography:

A. A. Ivanov. Pavel Mikhailovich Tatarinov. Collection of Information of the All-Union Scientific Research Geological Institute, 1956, #4.

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TERENIN, ALEKSANDR NIKOLAEVICH (Physical Chemist)

A. N. Terenin was born May 6, 1896. In 1921 he graduated from Petrograd (Leningrad) University, and in 1932 he became a professor there. He was a student of D. S. Rozhdestvenskii, the leading Russian optics specialist. In 1932 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences and in 1939 an Academician. He received a Stalin Prize in 1946 and in 1953 the S. I. Vavilov Prize, awarded by the U.S.S.R. Academy of Sciences.

Terenin's main works are devoted to study of the nature of physical and chemical processes which take place in substances under the influence of light. For discovering and analyzing these processes Terenin worked out optical methods which are based on observation of spectra and the intensity of luminescence of primary products of photoreactions. He showed the possibility of selectively exciting emission of atomic spectral lines of metal vapors and analyzing the energy level distribution. Terenin studied the dissociation of salt molecules in a vapor state under the influence of light which is accompanied by formation of luminescent atoms (1924). In this way he investigated many polyatomic molecules of inorganic and organic compounds by irradiating them with a short-wave ultraviolet radiation (1936). Terenin used fluorescence of aromatic molecules in a vapor state for establishing the mechanism in the intramolecular and intermolecular transformations of energy of excitation (1934). In 1943 he explained the phosphorescence of molecules of complex organic compounds, and of their photochemical reactions based on excitation of molecules into a state with two unpaired electrons (biradical). He was the first to obtain infra-red spectra of gases at several thousand atmospheres (1940). Terenin studied the optical properties of molecules, adsorbed on the surface of solid bodies and the nature of catalyst activity (1934). In 1945 he studied the photochemical reactions of chlorophyll and its analogs. In the 1950's Terenin was investigating reactions of organic molecules by using light to ionize electrons. Terenin is the leader of the school of Soviet photochemists.

In May 1960, Terenin visited the United States to attend the Gordon Conference on Infrared Spectroscopy, Meriden, New Hampshire.

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V. N. Kondrat'ev. New directions in the development of photochemistry (On the 50th Anniversary of Academician A. N. Terenin). Zhur. Fiz. Khim., 1946, 20, #6.

A. T. Vartanyan. Academician A. N. Terenin. Zhur. Fiz. Khim., 1956, 30, #5.

G. G. Neuimin. Aleksandr Nikolaevich Terenin (On the 60th Anniversary since the date of birth). Optika i Spektroskopiya, 1956, 1, #4.

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TERENT'EV, ALEKSANDR PETROVICH (Organic Chemist)

A. P. Terent'ev was born January 20, 1891. He graduated from Moscow University in 1913 and continued working there. In 1934 he became a professor. In 1953 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences. He was awarded in 1948 a Stalin Prize.

Terent'ev worked on methods in organic functional analysis. He worked on synthesis of sulfonic compounds. He also investigated the chemistry of pyrrole, furan, indole and other heterocyclic compounds, as well as stereochemistry and the nomenclature of organic compounds.

Bibliography:

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V. V. Tikhomirov was born December 23, 1912. In 1940 he graduated from the Moscow Institute of Energetics, after which he worked in a number of scientific research institutes. He has been a member of the Communist Party of the Soviet Union since 1948. In 1953 he was elected to the U.S.S.R. Academy of Sciences as a Corresponding Member. He has been awarded Stalin Prizes.

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TIKHONOV, ANDREI NIKOLAEVICH (Mathematician and Geophysicist)

A. N. Tikhonov was born October 30, 1906 in Gzhatsk, Smolensk Oblast. He graduated in 1927 from Moscow University. He holds the Doctor of Physical-Mathematical Sciences degree and in 1936 became a professor at Moscow University. He is also at the Institute of Terrestrial Physics. In 1939 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences.

The first investigations of Tikhonov were in theoretical topology. He introduced the concept of the product of topological spaces ("Tikhonov Product"). He then worked in mathematical physics and geophysics such as on theorems of uniqueness for equations of the parabolic type, distribution of electromagnetic fields, investigation of commercial minerals, and electromagnetic sounding of deep layers of the earth's crust with the aid of variation of the electromagnetic field of the earth.

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and A. A. Samarskii. Equations in Mathematical Physics. 2nd Ed. Moscow: 1953.

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TIMOFEEV, PYOTR VASIL'EVICH (Electrical Engineer)

P. V. Timofeev was born June 25, 1902. In 1925 he graduated from Moscow University. In 1928 he began working at the All-Union Electro-Technical Institute. He has taught at Moscow University, the Moscow Institute of Energetics and other

colleges and universities. He was awarded Stalin Prizes in 1946 and 1951, and was made an Honored Scientist of the R.S.F.S.R. in 1947. In July 1962, he received the Order of the Red Banner of Labor. In 1953 he was elected to the U.S.S.R. Academy of Sciences as a Corresponding Member.

Timofeev studied photoeffect, the secondary emission of electrons, discharge in gases, and electronic optics. He has designed photocells, electronic multipliers, transmitting tubes. Together with others he designed a series of new electronic devices.

Bibliography:

On the mechanism of secondary emission of electrons from complex surfaces. Zhur. Tekh. Fiz., 1940, 10, #1.

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N. A. Toropov was born June 28, 1908. He graduated in 1930 from Leningrad Polytechnical Institute. From 1930 to 1941 and 1944 to 1953, he worked at Lensovet Leningrad Technological Institute where, in 1940, he became professor. He had worked from 1941 to 1944 at the "Giprocement" Institute. In 1953, he became Director of the U.S.S.R. Academy of Sciences Institute of Silicate Chemistry. Toropov has been an Active Member of the U.S.S.R. Academy of Construction and Architecture since 1957. As of June 1962 he was elected Corresponding Member of the U.S.S.R. Academy of Sciences. In 1952 he received a State Prize.

Toropov's work deals with mineralogy of silicates and physical chemical investigation of silicate systems. He also investigated problems in physical chemistry of semi-conductors and ferrite materials.

Bibliography:

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Chemistry of Cements. Moscow: 1956.

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TRAPEZNIKOV, VADIM ALEKSANDROVICH (Scientist in
Automation and Electric-Machine Building)

V. A. Trapeznikov was born November 28, 1905. After graduating from the Moscow Technological Institute in 1928, he worked until 1933 at the All-Union Electro-Technical Institute. From 1930 to 1941, he taught at the Moscow Institute of Energetics and in 1939 became a professor there. In 1941 Trapeznikov began working at the Institute of Automation and Telemechanics of the U.S.S.R. Academy of Sciences, and in 1951 was made the Director. He has been a member of the Communist Party of the Soviet Union since 1951. In 1953 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences and in 1960 an Academician. He was awarded a Stalin Prize in 1951.

Trapeznikov proposed calculating transverse field electric machines, methods and techniques of economic analysis, and the construction of electrical machines and transformers. In the area of automation, he investigated automatic control of geometric sizes, construction of high-speed automatic devices and the design of aggregate systems of automatic control and regulation. Under his leadership methods were worked out for modeling systems of automatic control and he designed electronic modeling units.

As of 1961, Trapeznikov was Chairman of the National Committee of the Soviet Union for Automatic Control.

Bibliography:

Basis of Planning Series of Asynchronous Machines.

Moscow-Leningrad: 1937.

Generalized conditions of proportionality and optimal geometry of a transformer. *Electricity*, 1948, #2.

and others. Automatic Control of Linear Dimensions of Products. Moscow: 1947.

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Corresponding Member of the U.S.S.R. Academy of Sciences, V. A. Trapeznikov (On the 50th Anniversary of date of birth). *Automat. i Telemekh.*, 1956, 17, #2.

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TROFIMUK, ANDREI ALEKSEEVICH (Geologist in the Oil Field)

A. A. Trofimuk was born August 16, 1911. After graduating from Kazan' University in 1933, he worked in the oil industry. In 1953 he joined the staff of the All-Union Oil-Gas Scientific Research Institute and in 1953 to 1955 was deputy Director, then in 1955 to 1957 Director. In 1957 he became Director of the Institute of Geology and Geophysics of the Siberian Branch of the U.S.S.R. Academy of Sciences. Trofimuk has been a member of the Communist Party since 1941. In 1944 he was a Hero of Socialist Labor. He was elected a Corresponding Member of the U.S.S.R. Academy of Sciences in 1953 and in 1958 an Academician. In 1946 and in 1950 he was awarded State Prizes of the First Degree.

Trofimuk's main investigations are in the field of tectonics and the Volga-Ural oil bearing territory. Under his leadership, large-scale geologic surveys were carried out in this territory. As a result of the studies of lithology of oil bearing Ishimbaevo limestone, Trofimuk substantiated methods of prospecting for new oil deposits of the Ishimbaevo type. In cooperation with others, he divided the Volga-Ural territory into tectonic districts. He has worked on increasing the oil output from limestone collectors and also in particular in developing methods of flooding the oil fields.

As of 1961, Trofimuk was Chairman of the Commission for Conservation of Nature of the Siberian Branch U.S.S.R. Academy of Sciences.

Bibliography:

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TROSHIN, AFANASII SEMENOVICH (Cytologist)

A. S. Troshin was born in 1912. In 1936 he graduated from Leningrad State University, and completed his postgraduate work in 1940 at the Physiological Institute of the University. In 1940-41 he worked at the All-Union Institute of Experimental Medicine. He served in the Soviet Army from 1941-46, after which he worked as a senior scientific worker at the Institute of Experimental Medicine until 1950. From 1950 to 1951 he was at the U.S.S.R. Academy of Medical Sciences Institute of Oncology, and from 1951-1957, at the U.S.S.R. Academy of Sciences Institute of Zoology. In 1957 he became supervisor of the Laboratory on Cell Physiology of the U.S.S.R. Academy of Sciences Institute of Cytology, where in 1958, he became Director. In 1959 he was named Chief Editor of the journal "Cytology." He has been a member of the Communist Party of the Soviet Union since 1944. He was elected, in 1960, to the U.S.S.R. Academy of Sciences as a Corresponding Member.

Troshin's basic works deal with the study of cell permeability and the nature of bioelectric phenomena.

Bibliography:

and V. S. Kirpichnikov, A. N. Svetovidov. Labelling of *Cyprinus carpio* with radioactive phosphorous and calcium isotopes. Doklady Akad. Nauk S.S.S.R. 111, #1, 221-24 (1956).

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TSELIKOV, ALEKSANDR IVANOVICH (Mechanical Engineer)

A. I. Tselikov was born April 20, 1904. He graduated from the Moscow Technical College in 1928. He worked as a constructor in "Hammer and Sickle" steel plant, the Izhevsk plant and others. Since 1935, he has been teaching at colleges and universities, and in 1945 began working at the Central Construction Bureau of Metallurgical and Mechanical Engineering. He was awarded Stalin Prizes in 1947, 1948 and 1951. In 1945, he became a member of the Communist Party, and in 1953 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences.

Tselikov has constructed rollingmills and studied the theory of rolling. He has developed an original method of calculating rollingmills. Under his direction new, highly productive mechanized rollingmills (including blooming continuous sheet, pipe and wire mills, mills for rolling the thinnest ribbon, and section

of a variable and periodic cross-section—spheres, semi-axis) were constructed.

Bibliography:

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TSITSIN, NIKOLAI VASIL'EVICH (Botanist and Plant Breeder)

N. V. Tsitsin was born December 18, 1898. He graduated from the Institute of Agriculture and Melioration in Saratov in 1927 and worked at the All-Union Southeastern Scientific Research Institute of Agriculture. In 1932 he began working at Omsk Regional Experimental Station (later the Siberian Scientific Research Institute of Agriculture) and from 1936 to 1938 was the Director. In 1938-1949 and 1954-1957 Tsitsin was Director of the All-Union Agricultural Exhibit in Moscow; 1938-1948 Chairman of the State Commission on Quality Testing of Grain, Oil-bearing Plants and Grasses; in 1940-1949 Director of the Scientific Research Institute of the Non-Black Soil Belt Grain Economy. He was made Director, in 1945, of the Chief Botanical Gardens of the U.S.S.R. Academy of Sciences which he had organized. From 1938 to 1948, he was Vice President of the Lenin All-Union Agricultural Academy. Tsitsin has been a member of the Lenin All-Union Agricultural Academy since 1932 and an Academician of the U.S.S.R. Academy of Sciences since 1939. In 1938 he became a member of the Communist Party of the Soviet Union. He was elected an Honorary Member of the Rumanian Academy of Sciences in 1946 and, in 1947, of the Czech Academy of Agriculture. In 1958 he was made Chairman of the Society of Soviet-Indian Cultural Relations. He has

been a Deputy to the U.S.S.R. Supreme Soviet, first, third, and fourth convocations. In 1943 he was awarded a Stalin Prize.

Tsitsin's main investigations are in the field of hybridization, such as crossing grassy plants with woody plants, and cultured plants with wild growing ones. According to Soviet sources, he created a new form of perennial wheat. Tsitsin and his associates claim that wild rye (sandy and gigantic) can be crossed with wheat, barley, and rye; and also rye with quack grass. He has also obtained hybrids between ordinary and tree-like tomatoes, and produced new forms of stable hybrid variety of winter branching wheat.

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Role of Science and Advanced Practices in Raising the Agricultural Economy. Moscow: 1954.

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TSYTOVICH, NIKOLAI ALEKSANDROVICH (Geophysicist)

N. A. Tsytovich was born May 13, 1900. He graduated from Leningrad Institute of Civil Engineers in 1927. In 1930 he began to teach in a number of institutions of higher learning in Leningrad. He became, in 1951, professor of the Moscow Engineering Structural Institute. From 1947 to 1953, he was Chairman of the Presidium of the U.S.S.R. Academy of Sciences Yakut Branch. In 1943 he began work in the Institute of Permafrost of the U.S.S.R. Academy of Sciences where from 1948-1953, he was deputy Director. He has been a Corresponding Member of the U.S.S.R. Academy of Sciences since 1943 and an Active Member of the Academy of Construction and Architecture of the U.S.S.R. Academy of Sciences since 1956.

Tsytovich's main works deal with the study of frozen ground mechanics.

In 1950, Tsytovich was the recipient of a Stalin Prize.

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TUDOROVSKII, ALEKSANDR ILARIONOVICH (Physicist)

I. I. Tudorovskii was born August 24, 1875. He graduated in 1897 from Petersburg University. In 1902-1919 he taught at the Petersburg Polytechnic Institute, in 1919-1929 at the Petersburg University (Leningrad). Tudorovskii was named, in 1916, the head of the first Russian Calculating Bureau on the calculation of optical systems. In 1918 he began work at the State Optical Institute. He has been a Corresponding Member of the U.S.S.R. Academy of Sciences since 1933. He was awarded the Stalin Prizes in 1942 and in 1946, and in 1956 he was an Honored Scientist of the R.S.F.S.R.

The works of Tudorovskii deal with problems of geometrical optics and optical techniques and also with electromagnetic phenomena. Tudorovskii organized optics calculations in U.S.S.R. He used vector methods in calculating mirror and prism systems and aberrations of the third order. He completed, together with associates, large-scale works on the calculation and development of new types of photographic lenses.

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Electricity and Magnetism. Part 1-2. Leningrad, Moscow: 1933-35.

Theory of Optical Devices. 1-2, 2nd ed. Moscow-Leningrad: 1948-52.

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Influence of errors in the production of reflection prisms on the passing of rays in them. Zhur. Tekh. Fiz., 1934, 4, #4, 719-747.

Reflection systems with three mutually perpendicular planes in the case of minor deviations of angles from the right angle. Works of the State Optical Institute, 1941, 15, #112-120, 137-147.

Biography:

A. I. Tudorovskii—Honored Scientist of the R.S.F.S.R. Zhur. Tekh. Fiz., 1956, 26, #9, 2125.

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TUMANOV, IVAN IVANOVICH (Plant Physiologist)

I. I. Tumanov was born June 30, 1894. He graduated from the Kiev Agricultural Institute in 1923. From 1925 to 1942, he worked at the All-Union Institute of Horticulture in Leningrad. In 1940, he worked at the U.S.S.R. Academy of Sciences Institute of Plant Physiology where he became a professor in 1947. In 1953, he was elected to the U.S.S.R. Academy of Sciences as a Corresponding Member.

Tumanov's work is in winter endurance, drought-resistance, water treatment and fruit-yields of agricultural crops. He developed methods of laboratory determination of drought-resistance and frost-resistance of plants; he studied in detail the process of adaption of plants to winter conditions, and worked out a laboratory method of determining frost-resistance of field cultures. He carried out experimental studies on the physiology of rotting, the destruction of plants through excess moisture and under an ice crust. He has also worked on the physiology of fertility in cultured plants.

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TUPOLEV, ANDREI NIKOLAEVICH (Aeronautical Engineer)

A. N. Tupolev was born October 29, 1888. In 1909 he entered Moscow Higher Technical School where he was a pupil of N. E. Zhukovskii, founder of Russian Aviation. While still an undergraduate, he designed the first wind tunnel. Tupolev also participated in the work of the aeronautical group of the Moscow Higher Technical School and designed and built training gliders, in one of which he became a pilot. After his graduation from the Moscow Higher Technical School, he assisted in the organization of the Central Aerodynamic Institute and from 1918 to 1935 was the Director. Tupolev is a Lieutenant General in the Engineer-Technical Service. In 1933 he was elected Corresponding Member of the U.S.S.R. Academy of Sciences and in 1953 Academician. He was made an Honored Scientist of the R.S.F.S.R. in 1933 and a Hero of Socialist Labor in 1945. Tupolev was awarded a Stalin Prize and, in 1957, a Lenin Prize. He has been a Deputy of the Supreme Soviet (third through fifth convocations).

In 1922, a bureau of design, in the Central Aerodynamic Institute, under the direction of Tupolev, designed and constructed the single-seat ANT-1, built wholly of wood. In 1923-24, Tupolev designed a glider, a hydroplane, and the two-seat airplane, ANT-2, made entirely from duraluminum. Under his direction, more than 100 various types of airplanes were designed and constructed. Tupolev also designed and constructed medium and heavy bombers: TB-1, ANT-9, TB-3, ANT-25 (RD), TB-7, SB, TU-2, TU-4, TU-104, and the TU-114. In planes designed by Tupolev, a series of Russian flights were carried out in Europe and to America (flights of V. P. Chkalov and M. M. Gromov across the North Pole in an ANT-25 airplane), landings of polar expeditions on drifting ice floes, the rescue of the crew of the steamship "Chelyuskin," and other important tasks were accomplished. Tupolev airplanes were used for attacking enemy objectives at long distances.

The TU-104 (1955) is the Soviet jet airplane. Its cruising flight speed: 800 kilometers/hr. The cabin of the airplane is

hermetically sealed, which permits use of flight altitudes at 10,000 meters. Through further improvement of this type of aircraft, there appeared the more comfortable, multi-seat (170) passenger airplane, the TU-114 (1956) with turboprop engines. Continuing the work of N. E. Zhukovskii, Tupolev worked on aerodynamic calculation for airplanes and on the strength of material. Besides the designing of airplanes, Tupolev constructed various types of naval torpedo boats.

In March 1962, Tupolev was re-elected Deputy from R.S.F.S.R. to the Supreme Soviet. He has attended Pugwash Conferences.

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USHAKOV, SERGEI NIKOLAEVICH (Organic Chemist)

S. N. Ushakov was born September 16, 1893. In 1921 he graduated from the Petrograd Polytechnic Institute. He was made professor at the Leningrad Technological Institute in 1930; at the same time, 1931-41, he worked at the Scientific Research Institute of Plastics of which he was Director in 1931-38. In 1945-49, he was Director of the Scientific Research Institute of Polymerized Plastics. He was also the Director, in 1948-53, of the Institute of High Molecular Compounds of the U.S.S.R. Academy of Sciences. Ushakov has been a member of the Communist Party of the Soviet Union since 1943. He was elected, in 1943, a Corresponding Member of the U.S.S.R. Academy of Sciences. In 1942 and 1950 he received Stalin Prizes, and in 1943 was an Honored Scientist of the R.S.F.S.R.

The investigations of Ushakov are concerned with phenol aldehyde condensation, the synthesis of vinyl polymers, cellulose esters, the polymerization and copolymerization of unsaturated compounds, the preparation of polyvinyl alcohol and its acetals, and the reactions of high molecular compounds. He developed the technology of producing synthetic camphor, ethyl cellulose, benzyl cellulose, poison of phenolic resins, polyvinyl acetate, and polyvinyl alcohol.

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Esters of Cellulose and Plastics on Their Basis. Leningrad-Moscow: 1941.

Biography:

I. A. Arbuzova and E. N. Rostovskii. Laureate of the Stalin Prize S. N. Ushakov. *Uspekhi Khim.*, 1943, 12, #1.

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VAINSHTEIN, BORIS KONSTANTINOVICH (Physicist)

B. K. Vainshtein is a Doctor of Physico-Mathematical Sciences. In April 1962, he was made the Director of the U.S.S.R. Academy of Sciences Institute of Crystallography. He was elected a Corresponding Member of the U.S.S.R. Academy of Sciences in June 1962. In 1958 he received a prize awarded by the Academy of Sciences Presidium for his "Structural Electronography."

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VANICHEV, ALEKSANDR PAVLOVICH (Power Specialist)

In June 1962, A. P. Vanichev was elected Corresponding Member of the U.S.S.R. Academy of Sciences.

VARENTSOV, MIKHAIL IVANOVICH (Geologist)

M. I. Varentsov was born January 20, 1902. In 1929 he graduated from Moscow Mining Academy. He was Director of the Institute of Geological Sciences in 1949-55; and in 1956 he became Chief of the Laboratory in the Institute of Oil of the U.S.S.R. Academy of Sciences. In 1953 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences.

Varentsov has further developed the studies of his teacher, I. M. Gubkin (1871-1939, geologist), on the main problems of oil geology. In 1929-49 he studied regional geological investigations in tectonics, stratigraphy, and oil geology of Sakhalin Island, North Caucasus, Tamanskii Peninsula, Turkmeniya, Georgia, Azerbaijan, Armenia, Volga-Ural oil bearing territory, Venskii and Pannonskii Basins. In 1935-49 he was leader of expeditions into the territory beyond the Caucasus, Turkmen, Volga-Bashkir and Georgia.

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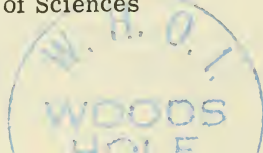
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VDOVENKO, VIKTOR MIHAILOVICH (Chemist)

V. M. Vdovenko was born January 5, 1907. He graduated from the Kiev Chemico-Technological Institute of Food Industry in 1930 and worked from then until 1935 at the Institute of Chemical Physics of the U.S.S.R. Academy of Sciences. In 1935 he began teaching at Leningrad University and in 1953 was made professor. He joined the staff of the Radium Institute of the U.S.S.R. Academy of Sciences and in 1953 became the Director. Vdovenko has been a member of the Communist Party of the Soviet Union since 1929. In 1953 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences.

The work of Vdovenko is in radiochemistry, inorganic and physical chemistry. He studied the behavior of ions in complex systems such as solutions containing gelatin, or solid electrolytes, the action of atomic hydrogen on inorganic compounds, chemical protection against war gases, and the adsorption of radium on glass as a function of the pH and radium ion concentration. Vdovenko investigated the distribution of radioactive elements between two immiscible solvents, which could make possible the utilization of an extraction method for separating and purifying these elements. He also investigated the systems: radioactive element-water-organic solvent, determined the solubility and forms of state of some radioelements in non-aqueous solutions, established the connection between the structure of organic solvents and their extractability.

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VEKSHINSKII, SERGEI ARKAD'EVICH (Electronics Physicist)

S. A. Vekshinskii was born October 15, 1896. He studied at Leningrad and Don Polytechnic Institutes. From 1922 to 1928 he was chief engineer of the Electrovacuum plant in Leningrad. He became Chief of the Vacuum Laboratory of "Svetlana" in 1928. He was chief engineer from 1936 to 1939 and a consultant from 1939 to 1941 at this plant. Vekshinskii was made Director of the Scientific Research Vacuum Institute in 1947. In 1940 he became a member of the Communist Party of the Soviet Union. In 1946 he was elected Corresponding Member of the U.S.S.R. Academy of Sciences and in 1953 Academician. He received a Stalin Prize in 1946, and in 1956 he was a Hero of Socialist Labor. In 1962 he was awarded the A. S. Popov Gold Medal.

Vekshinskii has worked on a new method of obtaining and investigating metallic alloys. The results of this work are set forth by Vekshinskii in his monograph, "New Method of Metallographic Study of Alloys" (1944, Stalin Prize 1946). He designed a whole series of new electronic devices which were utilized in industry. At the Scientific Research Vacuum Institute, he directs the development of vacuum apparatus for various branches of industry.

Bibliography:

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Biography:

E. V. Gurvich. S. A. Vekshinskii. Radiotekh. i Elektron, 1956, 1, #12.

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VEKSLER, VLADIMIR IOSIFOVICH (Physicist)

V. I. Veksler was born March 4, 1907. In 1931 he graduated from Moscow Institute of Energetics. He was at the All-Union

Electrotechnical Institute from 1930 until 1936 when he began work at the Institute of Physics of the U.S.S.R. Academy of Sciences. In 1956 he started working at the Joint Institute of Nuclear Research. He became a Corresponding Member of the U.S.S.R. Academy of Sciences in 1946 and in 1958 an Academician.

Veksler has worked on development of experimental methods used in investigations of x-rays, atomic nucleus, and cosmic radiation such as the use and mode of action of Geiger-Muller and proportional counters. He also studied electron-nuclear showers in cosmic rays. Well known is Veksler's work on the theory of particle accelerators. In 1944, he proposed a principle of phase stability of particles and used it as a basis of new types of accelerators--synchrotrons and synchrocyclotrons.

In November 1959, Veksler visited the United States on a Nuclear Science Exchange program in New York City.

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VEKUA, ILYA NESTOROVICH (Mathematician)

I. N. Vekua was born May 6, 1907 in Sheshelety, Georgian S.S.R. In 1930 he graduated from Tbilisi University and holds the degree of Doctor of Physical-Mathematical Science. He began working at Moscow University in 1952 and in 1953 at the Mathematics Institute of the U.S.S.R. Academy of Sciences. In 1946 he was elected Academician of the Georgian S.S.R. Academy of Sciences, also a Corresponding Member of the U.S.S.R. Academy of Sciences, and in 1958 Academician. He was awarded in 1950 a Stalin Prize.

Vekua has utilized methods of the theory of analytical functions of a complex variable for the solution of differential and integral equations, which are met in problems of physics and mechanics, particularly the theory of elasticity. He obtained solutions to equations of steady-state oscillations of an elastic cylinder, thin plates and sloping shells, and torsion and bending

of rods of heterogeneous material. The main results of Vekua in singular integral equations are included in the monograph of N. I. Muskhelishvili, "Singular Integral Equations" (1946). The work of Vekua in differential and integral equations has been utilized in the solution of problems in the theory of elasticity. Vekua also studied the general properties of the solutions of a wide range of elliptical partial differential equations and investigated the general boundary problems, which are important in the bending of the surfaces and in the theory of elastic shells.

As of 1961, Vekua was a Member of the Presidium of the Siberian Branch U.S.S.R. Academy of Sciences.

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Biography:

A. G. Kurosh and others, eds. Thirty Years of Mathematics in the U.S.S.R., 1917-1947. Collection of articles. Moscow-Leningrad: 1948.

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VELIKANOV, MIKHAIL ANDREEVICH (Hydrologist and Hydrodynamicist)

M. A. Velikanov was born January 22, 1879. After graduating from the Institute of Engineers of Lines of Communication, he worked as an engineer on the Siberian rivers Ob' and Yenisei, and in 1912-1921 on field studies of the rivers: Sukhona, North Dvina, Bug, Berezina, Volga, and Tom'. He taught in 1922-1929 at the Moscow Technical College, in 1930-1941 at the Moscow Hydrometeorological Institute, in 1942-1943 at the Central Asiatic University in Tashkent, in 1945-1954 at the Moscow University. Since 1939 he has been a Corresponding

Member of the U.S.S.R. Academy of Sciences. In 1948 he was made an Honored Scientist of the R.S.F.S.R.

Velikanov initially engaged in the study of flow stations (organized by him) and water balance. In 1932 he transferred to an experimental study of problems of river-bed hydrology in laboratories established under his direction for the Hydro-meteorological Service and the U.S.S.R. Academy of Sciences. Velikanov studied water balance, large scale turbulence of river streams, mechanism of water pumps and the behavior of river beds. He took part in many large scale hydraulic projects.

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Biography:

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Celebration in honor of Mikhail Andreevich Velikanov. Bulletin of Moscow University, Series on Physico-Mathematical and Natural Sciences, 1954, 4, #6.

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VERESHCHAGIN, LEONID FEDOROVICH (Physicist)

L. F. Vereshchagin was born in 1909. In 1930-32, he was a postgraduate student, and 1932-34 he worked as a senior engineer at a turbogenerator plant. He was an engineer, 1934-39, and subsequently chief engineer at the Physico-Technical Institute in Khar'kov. From 1939-1954, he was laboratory supervisor at the U.S.S.R. Academy of Sciences Institute of Organic

Chemistry, and from 1954-58, he was Chief of the U.S.S.R. Academy of Sciences Laboratory in Ultra-High Pressures in Moscow. In 1958 he became Director of the U.S.S.R. Academy of Sciences Institute of High Pressure Physics. He attained the rank of professor at Moscow University in 1953, and in 1960 was elected to the U.S.S.R. Academy of Sciences as a Corresponding Member. In 1952 he was awarded a Stalin Prize.

Vereshchagin's basic works are in the field of the physics and technology of ultra-high pressures.

In July 1958, Vereshchagin visited the United States to attend the Gordon Research Conference in Meriden, New Hampshire.

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VERNOV, SERGEI NIKOLAEVICH (Physicist)

S. N. Vernov was born July 11, 1910. He graduated from Leningrad Polytechnic Institute in 1931. From 1930 to 1935 he worked in the Institute of Radium of the U.S.S.R. Academy of Sciences. In 1935 he went to work in the Physics Institute of the U.S.S.R. Academy of Sciences, and in 1943 he became a professor at Moscow University. He became Director, in 1946, of the Scientific Research Institute on Nuclear Physics at Moscow University. Since 1953 he has been a Corresponding Member of the U.S.S.R. Academy of Sciences. In 1949 he was awarded a Stalin Prize. He was awarded a Lenin Prize in 1960 for his participation in the discovery of and investigation of the earth's external radiation belt and studies of the magnetic earth and moon.

Vernov studied the nature and properties of cosmic rays in the upper atmosphere. He investigated cosmic rays with the aid of automatic devices, elevated to high altitudes by pilot-balloons and transmitting their findings by radio. Vernov and his associates discovered considerable effects due to cosmic rays in the stratosphere. They showed that the primary particles are composed of protons, studied transition effects in the stratosphere and ascertained the origin of a soft component.

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Biography:

Grigorov, N. L. Investigation of Cosmic Rays in the Stratosphere. On the Work of the Laureate of the Stalin Prize, Professor S. N. Vernov. Successes of Contemporary Sciences. Moscow-Leningrad: 1950.

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VINOGRADOV, ALEKSANDR PAVLOVICH (Geochemist and Analytical Chemist)

A. P. Vinogradov was born August 21, 1895. In 1943 he became a Corresponding Member of the Academy of Sciences of the U.S.S.R., and since 1953 he has been an Academician. He was made, in 1949, a hero of Socialist Labor.

Vinogradov graduated from the Medical Military Academy and Leningrad University in 1924. He was a pupil and close collaborator of B. I. Vernadskii, the founder of the Russian School of Geochemistry. In 1948 he became Director of the Institute of Geochemistry and Analytical Chemistry, U.S.S.R. Academy of Sciences. Both in 1949 and 1951, he was winner of Stalin Prizes.

His fields of interest are the distribution of chemical elements in the upper part of the earth's crust, the investigation of primary rock from which the sedimental part of the earth's surface was formed, and the role played by vulcanic materials in the formation of this upper part. While studying the salts in the ocean, he came to the conclusion that cations of the sea water are products of the erosion of magmatic rocks and that anions are of vulcanic origin.

Vinogradov has worked predominantly with rare and widely dispersed chemical elements. In geochemistry of the individual elements (halogen, boron, strontium, etc.), he emphasized the importance of knowing, not only absolute amounts of the elements but also the ratios of the closely related elements, as that of chlorine to bromine or strontium to calcium. He described geochemically more than forty rare and widely dispersed elements for different soil zones and showed their roles

in various soil-forming processes. He has investigated the association of heavy metals such as vanadium and nickel with bitumen. He has been active in the use of isotopes (sulfur, hydrogen, oxygen, carbon, etc.) in geochemistry and has used oxygen isotope O^{18} as an indicator of geochemical processes. In photosynthesis, he found that plants liberate oxygen from water and not from carbon dioxide. Also he showed that natural hydroxides of iron, manganese, etc. obtain oxygen from water rather than from the air. In the biogeochemical field, he investigated the changes produced by surroundings in the chemical composition of marine organisms. He found that the majority of chemical elements exist in all the organisms and that elemental chemical composition of a species is its characteristic feature. Vinogradov also developed a theory of biogeochemical regions and by his study of areas with deficient and excessive content of chemical elements, he evolved a theoretical basis for ordinary fertilizers and those containing microelements. His investigations in biogeochemical regions also explained the effect of the chemical environment on the evolution of flora and fauna during different geological ages. In analytical chemistry, Vinogradov developed many methods of separation of numerous stable and unstable chemical elements and introduced instrumental methods of analysis such as polarography, spectrometry, radiometry, mass spectrometry, x-ray, and luminescence.

As of 1961, Vinogradov was Director of the Siberian Branch U.S.S.R. Academy of Sciences Institute of Geochemistry and of the U.S.S.R. Academy of Sciences Institute of Geochemistry and Analytical Chemistry.

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Biography:

Academician Aleksandr Pavlovich Vinogradov (for 60th birthday). Vestnik Akademii Nauk S.S.S.R., 1956, #2, 97-98.

Vinogradov Aleksandr Pavlovich. Vestnik Akademii 1954, #4, 70.

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VINOGRADOV, IVAN MATVEEVICH (Mathematician)

I. V. Vinogradov was born September 14, 1891. He graduated from the Petersburg University in 1914 and remained there to prepare for a doctor's degree. From 1918-1920 he was a reader and professor at the Perm University, 1920-1934 a professor at Leningrad Polytechnical Institute, and in 1925 professor at the Leningrad University. In 1932 Vinogradov became Director of the Mathematics Institute of the U.S.S.R. Academy of Sciences. He has been an Academician of the U.S.S.R. Academy of Sciences since 1929. In 1945 he was recipient of a Stalin Prize and also a Hero of Socialist Labor.

Vinogradov's scientific activity pertains to the area of analytical theory of numbers. His first work is devoted to questions of determining errors of approximate formulas, which express the sums of values of various arithmetical functions. In 1937 Vinogradov derived the formula for a number of representations of the odd number in the form of a sum of three simple numbers, and used them to obtain a solution of the Goldbach problem.

In 1961 Vinogradov was awarded the Order of Lenin.

Bibliography:

Selected Works. Moscow: 1952 (contains bibliography of the works of Vinogradov).

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Biography:

editorship of A. G. Kurosh and others. Thirty years of Mathematics in the U.S.S.R., 1917-1947. Collection of articles. Moscow-Leningrad: 1948 (contains bibliography of works of Vinogradov).

K. K. Mardzhanishvili. Ivan Matveevich Vinogradov (On the 60th Anniversary since the date of birth). *Uspekhi Mat. Nauk*, 1951, 6, #5.

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VLADIMIRSKII, VASILII VASIL'EVICH (Physicist)

V. V. Vladimirskii has been working at the U.S.S.R. Academy of Sciences Institute of Theoretical and Experimental Physics. In June 1962 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences.

Bibliography:

Magnetic mirrors, canals and flasks for cold neutrons.

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and V. N. Andreev. Non-preservation of stability in strong interactions, and nuclear fission. *Zhur. Ekspt'l. i Teoret. Fiz.* 41, #2, 663-65 (1961).

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VLASOV, KUZMA ALEKSEEVICH (Geochemist and Mineralogist)

K. A. Vlasov was born November 14, 1905. He graduated in 1931 from Timiryazev Moscow Agricultural Academy. From 1932 to 1952 he worked at the Institute of Geological Sciences at the U.S.S.R. Academy of Sciences. In 1953 he became Chief of the Laboratory of Mineralogy and Geochemistry of Rare Elements, and in 1956 Director of the Institute of Mineralogy, Geochemistry, and Crystallography of Rare Elements of the U.S.S.R. Academy of Sciences. Vlasov has been a member of the Communist Party of the Soviet Union since 1939. In 1953 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences. He has been awarded two orders and also medals.

Vlasov has studied the genesis and classification of granite pegmatites and other deposits of rare elements.

In November 1958, Vlasov visited the United States to attend the American Geological Society meetings in St. Louis, Missouri.

Bibliography:

Texture-paragenetic classification of granite pegmatites. Izvest. Akad. Nauk S.S.S.R., Ser. Geol., 1952, #2.

Genesis of Rare Metallic Granitic Pegmatites. Moscow: 1955.

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VOEVODSKII, VLADISLAV VLADISLAVOVICH (Physical Chemist)

V. V. Voevodskii was born July 25, 1917. He graduated from the Leningrad Polytechnic Institute in 1940 and remained to do graduate work. In 1944 he became a senior scientific research worker of the Institute of Chemical Physics at the U.S.S.R. Academy of Sciences. He taught from 1946 to 1952 at Moscow University. In 1953 he began work at the Moscow Physico-Technical Institute and in 1955 was made professor there. Voevodskii was elected a Corresponding Member of the U.S.S.R. Academy of Sciences in 1958. In 1952 he was awarded the D. I. Mendeleev Prize.

Voevodskii's work is in chemical kinetics and the chemistry of free radicals. He has worked in combustion theory, and oxidation of hydrocarbons, heterogeneous and homogeneous catalysis, and structure and properties of free radicals. He established a number of important details in the mechanism of a chain reaction of hydrogen oxidation. Together with N. N. Semyonov and F. F. Vol'kenshtein, he demonstrated the possibility of radical chain mechanisms in heterogeneous-catalytic processes.

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and Ya. B. Zel'dovich. Thermal Explosion and Velocity of Flames in Gases. Moscow: 1947.

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VOL'FKOVICH, SEMEN ISAAKOVICH (Inorganic Chemist)

S. I. Vol'fkovich was born October 11, 1896. He graduated from Moscow University of National Economy in 1920. In 1921 he began working at the Scientific Research Institute for Fertilizers and Insectifungicides and is the scientific director. In 1929, he was appointed professor at Moscow Military Technical School, and in 1932 he was made professor at the Military Academy of Chemical Defense. In 1947 he was made professor at Moscow University. He has been an Academician since 1946.

With E. I. Zhukovskii he made a study of electrothermal distillation of phosphorus from native phosphates in 1922. On the basis of this study, electric furnace plants were built for the first time in the U.S.S.R. From 1923 to 1929, he supervised the production of superphosphates from native phosphates and apatites. He worked also on the acid conversion of phosphates to concentrated fertilizers. Then he developed a process for obtaining potassium salts from sylvinite. In 1926, Vol'fkovich and his co-workers worked out a coordinated treatment of phosphates with nitric acid to obtain phosphorus, nitrogen, and complex fertilizers, fluorine salts, and rare earths. For this work he received a Stalin Prize in 1941. In 1930 and 1931 with A. P. Belopol'skii, he studied a physico-chemical treatment of mirabilite to obtain soda and ammonium sulfate. Vol'fkovich initiated a number of studies on crystal chemistry of ammonium nitrate. And he also proposed a method of obtaining boric acid from native datolites. With co-workers he developed a hydrothermal method of phosphate treatment. From 1945 to 1950, he worked out new methods for obtaining fluorine compounds, ammonium nitrates and sulfates, phosphides, chlorides, and phosphorus compounds. He also developed procedures for obtaining a number of metallo organic compounds.

In June 1958, Vol'fkovich visited the United States to attend the 50th Annual American Institute of Chemical Engineers in Philadelphia, Penna.

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Biography:

O. E. Zvyagintsev. Semen Isaakovich Vol'fkovich (for 60th birthday). Zhur. Priklad. Khim., 1946, 19, #12.

A. M. Dubovitskii and M. E. Pozin. Semen Isaakovich Vol'fkovich (for 60th birthday). Zhur. Priklad. Khim., 1956, 29, #11.

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VOLOGDIN, ALEKSANDR GRIGOREVICH (Geologist)

A. G. Vologdin was born March 11, 1896. In 1925 he graduated from the Leningrad Mining Institute. He worked, in 1920, for the Geological Committee and subsequently in organizations developing from it. In 1943 he worked at the Paleontological Institute of the U.S.S.R. Academy of Sciences. He was elected to the U.S.S.R. Academy of Sciences in 1939 as a Corresponding Member.

Vologdin worked in the geology and minerals of Yuzhno-Krasnoyarskii Kray, in paleontology (particularly the archaeocyathus and the most ancient algae), in stratigraphy, in hydrogeology, in geologic engineering, and in search for minerals of commercial importance.

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VOL'SKII, ANTON NIKOLAEVICH (Metallurgist)

A. N. Vol'skii was born June 24, 1897. In 1924 he graduated from the Moscow Institute of National Economy. From 1928 to 1948 he worked in the State Scientific Research Institute of Non-Ferrous Metals. He began teaching in the Moscow Institute of Non-Ferrous Metals and Gold in 1929, and in 1934 he was made a professor there. From 1953 he was a Corresponding Member of the U.S.S.R. Academy of Sciences, and since 1960 an Academician.

Vol'skii has studied chemical equilibriums in melts during metallurgical smelting in non-ferrous metallurgy. He completed a series of investigations of great practical significance.

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Extraction of Zinc and Lead from Waste Products of Metallurgical Plants. Moscow: 1934.

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VONSOVSKII, SERGEI VASIL'EVICH (Physicist)

S. V. Vonsovskii was born September 2, 1910. After graduating from Leningrad University in 1932, he worked in the Urals Physico-Technical Institute in Sverdlovsk. In 1939 he began working in the Institute of Physics of Metals in the Urals branch of the U.S.S.R. Academy of Sciences, now U.S.S.R. Academy of

Sciences, and in 1944 he was also a professor at Urals University. Since 1953 he has been a Corresponding Member of the U.S.S.R. Academy of Sciences.

In order to explain the electrical and magnetic properties of metals and semiconductors, Vonsovskii (with S. Shubin) developed the so-called "polar" and (s-d) exchange theories, treating the system of electrons in a crystal lattice as a single interacting system. Besides the processes of exchange, he also took into account transfer processes, which lead to the establishment of polar states. On the basis of these models, Vonsovskii and associates constructed a general theory on ferromagnetics close to the Curie point, and explained fractional atomic moments, the optic, magnetooptic, electric and other phenomena in ferromagnetics, an indirect exchange in ferrites, and the general theories of transition metals with magnetic atomic orders.

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VOROZHTSOV, NIKOLAI NIKOLAEVICH (Organic Chemist)

N. N. Vorozhtsov, son of N. N. Vorozhtsov (1881-1941, organic chemist), was born June 5, 1907. He graduated from the Moscow Technological College in 1928, and from then until 1930 he worked in the Laboratory of the Commission on the Study of the Natural Productive Forces of the U.S.S.R. Academy of Sciences in Moscow. In 1930-38, he was at the State Institute of High Pressures in Leningrad; in 1938-43 he taught at the Kazakh State University where, in 1939, he was made professor. He was Director of the Scientific Research Institute of Organic Semiproducs and Dyes from 1943 to 1947, and in 1945 was Chairman of the Department of the Moscow Mendeleev Chemico-Technological Institute. In 1958 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences. He became a member of the Communist Party of the Soviet Union in 1942. He received a Stalin Prize in 1952.

The investigations of Vorozhtsov are in organic chemistry, technology of organic dyes and intermediates. He investigated exchange reactions of aryl halides, catalytic isomerization, halogen-naphthalenes, halogenation of aromatic and aliphatic compounds, sulfonation and the transformation of sulfo acids. A part of the work of Vorozhtsov deals with the structure of natural products. He supplemented and prepared for publication the 3rd and 4th editions of a well-known monograph of N. N. Vorozhtsov, Sr., "Basis of Synthesis of Intermediate Products and Dyes," (3rd ed., 1952).

As of 1961, Vorozhtsov was the Director of the Institute of Organic Chemistry of the Siberian Branch U.S.S.R. Academy of Sciences.

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and V. A. Kobelev. Kinetics and mechanism of a catalytic exchange of chlorine for an amine group. Doklady Akad. Nauk S.S.S.R., 1934, 3, #2.

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VUL, BENTSION MOISEEVICH (Physicist)

B. M. Vul was born May 22, 1903. He graduated in 1928 from the Kiev Polytechnic Institute. In 1932 he went to work at the Physics Institute of the U.S.S.R. Academy of Sciences. He has been a member of the Communist Party of the Soviet Union since 1922. In 1939 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences. He was the recipient in 1946 of a Stalin Prize.

Vul's works deal with the physics of dielectrics. While studying electric strength of dielectrics, he established the nature of the end-effect in the breakdown of dielectrics and the particularities of the breakdown of compressed gases in sharply heterogeneous fields. He discovered (1944) a new ferroelectric-barium titanate (BaTiO_3) which has a very high dielectric constant.

In March 1960, Vul visited the United States to attend the 20th Annual Conference on Physical Electronics in Cambridge, Massachusetts.

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Consecutive breakdown of solid dielectrics. Zhur. Tekh. Fiz., 1932, 2, #3-4.

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WWEDENSKY (VVEDENSKII), BORIS ALEKSEEVICH

(Electronics Physicist)

B. A. Wwedensky was born April 19, 1893. After graduating from Moscow University in 1915, he worked in several scientific research organizations. From 1927 to 1935, he was at the All-Union Electrotechnical Institute where he was made professor in 1929. He worked at the Physics Institute of the U.S.S.R. Academy of Sciences from 1941 until 1944. Wwedensky, in 1941-1944, served as a member of the Presidium of the U.S.S.R. Academy of Sciences. In 1944-1951 he was Chairman of the Section on Development of Problems in Radioengineering of the U.S.S.R. Academy of Sciences and, in 1946-1951, he was Academician Secretary of the Department of Technical Sciences of the U.S.S.R. Academy of Sciences. He became a member, in 1949, of the main editorial board and the chief editor, in 1951, of the Great Soviet Encyclopedia. Since 1959, he has been Chairman of the Scientific Council of the Soviet Encyclopedia. In 1953 he began working at the Institute of Radioengineering and Electronics of the U.S.S.R. Academy of Sciences. Wwedensky was elected Corresponding Member of the U.S.S.R. Academy of Sciences in 1934, and in 1943 Academician. In 1954 he became a Corresponding Member of the German Academy of Sciences, Berlin. He has received the following awards: in 1949 the Gold Medal of A. S. Popov; in 1952 the State Prize; in 1945 and 1953, the Order of Lenin; in 1953 and 1962, the Red Banner of Labor.

Wwedenskii's main work is concerned with the study of the propagation of ultra-short waves, and also with investigations in magnetism. Under his leadership an ultra-short wave broadcasting station (RV-61) was built in 1929. In 1932-1933 he organized expeditions for the study of the propagation of meter and decimeter waves over the sea surface. The expedition proved the possibility of the propagation of ultra short waves beyond the horizon (diffraction propagation) and allowed a determination of the relationship between the propagation of ultra short waves and meteorological conditions (phenomenon of refraction). Wwedensky introduced the "diffraction formula,"

according to which the field of ultra short waves beyond the horizon could be calculated (1935-1936). Wwedensky's publications on the propagation of ultra short waves are: Basis of the Theory of Propagation of Radiowaves (1934); Propagation of Ultra Short Waves (1934); Propagation of Ultra Short Waves (1938; together with A. G. Arenberg). His investigations in magnetism are presented in the monograph, Contemporary Study of Magnetism (1929; together with Academician G. S. Landsberg).

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Physical Phenomena in Cathode Tubes, 4th ed. 1932.

Biography:

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YAKOVLEV, ALEKSANDR SERGEEVICH (Aircraft Designer)

A. S. Yakovlev was born April 1, 1906. He was a Colonel-General in the Engineering Technical Service. In 1931, he graduated from the Military Air Engineering Academy in Moscow. In 1934 he was Chief, and in 1957, he became General Designer of the Experimental-Designing Bureau. From 1940-1948 he was deputy of the People's Commissariat and subsequently deputy Minister of the Aviation Industry. He was a delegate to the Supreme Soviet at the second and fifth convocations. Yakovlev has been a member of the Communist Party since 1938. He has been awarded the title Hero of Socialist Labor, and was the recipient of a Stalin Prize in 1941, 1942, 1943, 1946, 1947, and 1948. In 1943 he was elected to the U.S.S.R. Academy of Sciences as a Corresponding Member.

Yakovlev designed a number of planes for different purposes—sports, training, passenger, fighters, bombers and helicopters. Among the training and passenger airplanes, these are outstanding: training planes UT-1 and UT-2, planes for communication YAK-12, which is utilized in agriculture and as a light passenger airplane, the YAK-18 for beginners' study and training. Yakovlev has also designed combat, piston and jet airplanes, primarily fighters and fighter-interceptors. In the beginning of World War II he designed a fighter, the YAK-1, which was widely employed. Also well known is the fighter YAK-9 and particularly the YAK-3 which was one of the main fighters among those participating in World War II (1941-45) and which had high speed and maneuverability. Under the leadership of Yakovlev, the first jet fighter, the YAK-15 was designed in 1945, and subsequently the jet fighters YAK-17, YAK-23 and later a series of jet supersonic fighters. Yakovlev also designed helicopters, including the twin-engine helicopter, the "Flying Car"—the YAK-24. He is the author of memoirs "Stories of an Aircraft Designer" (1957).

In March 1962, Yakovlev was elected to the Council of Nationalities.

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YAKOVLEV, N. N. (Geologist-Paleontologist)

N. N. Yakovlev was born April 27, 1870. He worked on the Geological Committee (now the All-Union Scientific Research Geological Institute in Leningrad) in 1895. From 1900-1930, he was professor at the Petersburg (Leningrad) Mining Institute. In 1923-26, he was Director of the Geological Committee. He was awarded the title Honored Scientist of R.S.F.S.R. in 1930. In 1948 the U.S.S.R. Academy of Sciences awarded Yakovlev the A. P. Karpinskii Prize for his scientific investigations. He was elected, in 1921, to the U.S.S.R. Academy of Sciences as a Corresponding Member.

Yakovlev conducted geological investigations in various regions of the country. In the Donbas, from 1892, he participated in a geological survey conducted by the Geological Committee and studied the structure of the Bakhmut salt-bearing basin. He worked out and paleontologically substantiated the stratigraphy of lower Permian sediments. In the Urals, Yakovlev conducted geological investigations on deposits of coal, iron and other ores; the Caucasus and territories beyond the Caucasus, he studied various mineral sources. He was the first to make paleoecological investigations of invertebrates in Russia, particularly of the three Paleozoic groups of animals—brachiopods, tetracorals and pelma echinoderms. He investigated the origin of structural features of organisms and the change of these features under the influence of external factors.

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V. P. Nekhoroshev. On the work of N. N. Yakovlev in the field of geology. Annual of the Paleontologic Society, 14, 1948-53.

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YANSHIN, ALEKSANDR LEONIDOVICH (Geologist)

A. L. Yanshin was born March 28, 1911. In 1923 he graduated from Moscow Geological Survey Institute and had been working since 1929 in the Mining-Geological Department at the Scientific Institute for Fertilizers. From 1936 he worked at the Geological Institute of the U.S.S.R. Academy of Sciences and in 1956 was made Chairman of the Department on Regional Tectonics at this Institute. Yanshin was elected an Academician of the U.S.S.R. Academy of Sciences in 1958. In 1953 he was awarded the A. P. Karpinskii Prize for his work on "Geology of the North." He was the recipient of three orders and also some medals.

Yanshin's investigations are in tectonics, stratigraphy, lithology, and hydrogeology primarily of the Western territory of the Kazakh S.S.R., and of the Southern Urals. In the Southern Urals, he located a wide development of continental Mesozoic sediments and distinguished in them a series of formations. He worked out the stratigraphy of Tertiary sedimentation of the Aralo-Turgaisk depression, in connection with which he critically examined some general questions in paleogenic stratigraphy. In biostratigraphic examinations, he adhered to the idea of

non-simultaneous appearance and disappearance of the same or similar species in dissimilar zoophyto-geographic territories. In tectonics he studied so-called "young" platforms with a Paleozoic folded base. In particular, he suggested new ideas on folded structures of the Urals, Tien Shan, and Mangishlak, and of the deep geological structure of the plains surrounding the Aral Sea. The presence of oil deposits in this territory was predicted by Yanshin. He took part, in 1952 and 1956, in the compilation of tectonic maps of the U.S.S.R. He studied lignites, iron ores, bauxite, phosphorite, potassium salt, and cement raw materials, and he discovered industrial deposits of these minerals. He also found a series of artesian basins.

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YUNUSOV, SABIR YUNUSHOVICH (Organic Chemist)

Yunusov was born November 11, 1909, in Tashkent. In 1935 he graduated from the Chemical Faculty of the Central Asia University. Since 1943 he has been Chief of the Laboratory of Alkaloid Chemistry of the Uzbek S.S.R. Academy of Sciences Institute of Plant Chemistry, and he is Director of this institute. In 1948 Yunusov received his Doctor of Chemical Sciences degree. He has been a member of the Communist Party of the Soviet Union since 1950. In 1952 he was elected Academician of the Uzbek Academy of Sciences, and in 1958 a Corresponding Member of the U.S.S.R. Academy of Sciences. From 1952 to

1962 he was Vice-President of the Uzbek S.S.R. Academy of Sciences.

Yunusov's investigations are in alkaloid chemistry. He has studied the alkaloid content of over four thousand plant flora of Uzbekistan and Central Asia. From twenty-five hundred plant types he isolated one hundred and forty alkaloids of which ninety-five were new. Yunusov established the structure of twenty-eight alkaloids and found a number of them to have medicinal properties. He has also conducted research on alkaloid storage in various parts of plants with respect to their period of growth.

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and S. T. Akramov. Alkaloids of Lolium cuneatum. II. Zhur. Obshchei Khim. 30, 677-82 (1960). C. A. 54, 24831c (1960).

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ZABABAKHIN, EVGENII IVANOVICH (Physicist)

E. I. Zababakhin was born in 1917. After graduating from the Military Air Engineering Academy in 1944, he taught there. He has been a member of the Communist Party of the Soviet Union since 1949. In 1958 he was elected a Corresponding Member of the U.S.S.R. Academy of Sciences.

Zababakhin's work was in gas dynamics.

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and M. N. Nechaev. Shock waves of fields and their cumulation. Zhur. Eksptl. i Teoret. Fiz., 1957, 33, #2 (8).

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ZAVALISHIN, DMITRII ALEKSANDROVICH (Electrotechnologist)

D. A. Zavalishin was born in 1900. In 1925 he graduated from Leningrad Polytechnical Institute, where he worked until 1939. From 1939 to 1941 he was Chairman of the Department of Electric Machines of the S. M. Buden Military Electrotechnical Academy, and from 1941 to 1946 he was professor on the faculty of special electrotechnology of the Armed Forces Advanced School of Engineering-Technology. He became, in 1946-1959, Chairman of the Department of Electrical Machines of the Leningrad Institute of Aeronautical Instrument Construction. In 1959, he became Chief of the Laboratory on Scientific Fundamentals of Automatized Electrical Apparatus of the U.S.S.R. Academy of Sciences Institute of Electromechanics. He was elected, in 1960, a Corresponding Member of the U.S.S.R. Academy of Sciences. In 1957 he was awarded the title of Honored Scientist and Technologist of the R.S.F.S.R.

Zavalishin's principal work is in the field of electrical machines, electron-ionic and semiconductor equipment.

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ZAVOISKII, EVGENII KONSTANTINOVICH (Physicist)

E. K. Zavoiskii was born September 28, 1907. In 1930 he graduated from the University of Kazan' and has taught there since 1933, becoming a professor in 1945. He has been working at U.S.S.R. Academy of Sciences departments since 1947. In 1957 he was awarded the Lenin Prize. He was elected, in 1953, a Corresponding Member of the U.S.S.R. Academy of Sciences.

Zavoiskii discovered in 1944 the phenomenon of electronic paramagnetic resonance. On the basis of an analysis of experimental data, together with S. A. Al'tschuller and B. M. Kozyrev, he established a series of relationships between the form of

resonant lines. From 1947 he has been developing the use of image converters for a scintillation chamber, and for investigating processes of a comparatively short duration (10^{-9} - 10^{-14} seconds).

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ZAYMOVSKII, ALEKSANDR SEMYONOVICH (Metallographer)

A. S. Zaymovskii was born October 9, 1905. Upon graduation from the Moscow Mining Academy in 1928, he taught there, and subsequently at the Moscow Institute of Steel, and at Moscow University from 1932-1941. From 1928-43, he worked at the All-Union Electro-Technical Institute. Since 1945 he has been a member of the Communist Party of the Soviet Union. In 1958, he was elected to the U.S.S.R. Academy of Sciences as a Corresponding Member. He received a Stalin Prize.

Zaymovskii's main works are in metallography, the production of new alloys with special physical properties. Zaymovskii aided the production in the U.S.S.R. of new magnetic and conducting alloys. He investigated conducting and transforming steel, electro-technical iron, Permalloys and powdered magnetic dielectrics.

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and others. Metals and Alloys in Electrical Engineering, 3rd ed., 1-2. Moscow-Leningrad: 1957.

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Y. B. Zel'dovich was born March 18, 1914. He studied at Leningrad University. In 1931 he began working at the Institute of Chemical Physics of the U.S.S.R. Academy of Sciences. He was elected Corresponding Member of the U.S.S.R. Academy of Sciences in 1946 and Academician in 1958. In 1943 he was awarded a Stalin Prize.

Zel'dovich examined the statistics of heterogeneous surfaces based on the measurement of the adsorption isotherm. In the period 1935-1939 he and associates ascertained the mechanism of nitrogen oxidation during an explosion. Together with Yu. B. Khariton, Zel'dovich proposed a calculation of the chain reaction in uranium fission in 1939-1940. In 1938-1943, he and D. A. Frank-Kamenetskii worked out a theory of the flame propagation and proposed a mechanism for chemical reaction in a shock wave.

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ZENKEVICH, LEV ALEXANDROVICH (Oceanographer)

L. A. Zenkevich was born June 17, 1889. He was a graduate of the Law Faculty in 1912, and in 1916 of the Moscow University Department of Physico-Mathematical Faculty. Upon his graduation, he worked there as a professor since 1930. He also worked at the Institute of Oceanography at the Academy of Sciences in 1927. He became a Corresponding Member of the U.S.S.R. Academy of Sciences in 1953.

Zenkevich took an active part in organizing the Floating Scientific Marine Institute (later known as the State Oceanographic Institute) where he worked from 1921-30. He took part in many expeditions for comprehensive study of the northern seas, the Caspian, the Far East Seas and the Pacific Ocean (1949-52); he directed the expedition on the "Vitiaz." His basic work is devoted to the fauna of the Russian seas. He introduced a quantitative system for the study of marine benthic fauna. He has developed ration methods of feeding of fish. To improve the food base of the Caspian, he acclimatized the clamworm. He studied the evolution of motive power of invertebrates. From 1955 he was a member of the Advisory Committee on Marine Science at the UNESCO and vice president of the Special Committee on Oceanographic Research at the International Council of Scientific Unions.

In August 1959, Zenkevich visited the United States to attend the International Oceanographic Conference in New York City. As of 1961 he was Chairman of the Oceanographic Committee of the U.S.S.R. Academy of Sciences.

Bibliography:

Fauna and the Productivity of the Seas, 1947, 1-2.

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ZERNOV, DMITRII VLADIMIROVICH (Electronics Expert)

D. V. Zernov was born March 20, 1907. Upon graduation in 1930 from Moscow University, he worked at the All-Union Electro-Technical Institute until 1934. From 1932 to 1938, he taught at the Moscow Institute of Transport Engineers. From 1936 to 1939, he worked at the Scientific Research Institute of Cinematography and Photography. In 1939, he worked at the Institute of Automation and Telemechanics of the U.S.S.R. Academy of Sciences, and in 1953 at the U.S.S.R. Academy of Sciences Institute of Radiotechnology and Electronics. He was elected, in 1953, a Corresponding Member of the U.S.S.R. Academy of Sciences.

In the early 1930's, Zernov was the first in the Soviet Union to construct sodium vapor fluorescent lamps. Under his leadership a television system with a large multi-grain screen was developed, for which he created a multi-contact, electron-beam commutator. In later years, Zernov continued work on the improvement and investigation of electron-beam devices of the commutator type. He studied electronic emission of thin dielectric layers under the influence of a field of a positive surface charge which is formed by electron bombardment.

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ZHAVORONKOV, NIKOLAI MIKHAILOVICH (Chemical Technologist)

N. M. Zhavoronkov was born August 7, 1907. Upon graduation from the Moscow Chemical-Technological Institute in 1930, he joined the Institute's faculty, and in 1942 became a professor. In 1948 he became Director of the Institute. Beginning in 1944, he has been working at the L. A. Karpov Physico-Chemical Institute. Since 1939, he has been a member of the

Communist Party of the Soviet Union. He was elected, in 1953, a Corresponding Member of the U.S.S.R. Academy of Sciences, and in June 1962, an Academician. In June 1958, Zhavoronkov visited the United States to attend the 50th Anniversary of the Institute of Chemical Engineers in Philadelphia, Penna.

In the beginning of his scientific career, Zhavoronkov studied processes for obtaining hydrogen and a nitrogen-hydrogen mixture and their purification from carbon dioxide and carbon monoxide for production of synthetic ammonia. In 1936-50 he investigated hydro-aerodynamics of scrubbers and fractional columns. For this work in 1950 the Academy of Sciences awarded him the D. I. Mendeleev Prize.

The works of Zhavoronkov in later years dealt with the processes of separating liquid and gas mixtures by absorption, rectification, molecular distillation and chemical ion exchange. Together with others, he completed a series of works on the theory of processes of concentration of stable isotopes and worked out methods for isolating isotopes of hydrogen, carbon, nitrogen, oxygen, boron and other light elements.

In September 1962, Zhavoronkov was appointed Director of the U.S.S.R. Academy of Sciences Institute of General and Inorganic Chemistry.

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Zhurkov's main works are the physics of solids and polymers. He has carried out research on the strength of brittle materials and polymers, temperature-dependent breakdown, and the duration of action of mechanical stress. Zhurkov conducted investigations on the molecular mechanism of transition into a solid state (vitrification) of polymers and amorphous substances, relating the temperature dependence of mechanical properties of such substances to the nature of intermolecular interaction. On the basis of these studies he developed the theory of polymer plastification.

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ZVEREV, MITROFAN STEPANOVICH (Astronomer)

M. S. Zverev was born April 16, 1903. In 1929, he graduated from the Moscow Conservatory, and in 1931 from Moscow University. From 1931-1951, he worked at the Shternberg State Astronomical Institute in Moscow. He was a member of the teaching staff at Moscow University from 1938-1952, and was made professor in 1948. In 1951 he was appointed deputy Director of U.S.S.R. Academy of Sciences Main Astronomical Observatory in Pulkovo. He was elected to the U.S.S.R. Academy of Sciences as a Corresponding Member in 1953. Since 1947 he has been a member of the Communist Party of the Soviet Union.

For many years Zverev made observations on the meridian circle in Moscow and Pulkovo. He compiled a series of catalogs on stars, including a catalog on geodesic stars, a catalog on fundamental, faint stars. Zverev developed an idea of a new fundamental system of coordinates—a catalog on faint stars. He also worked on time service, gravimetry and on variable stars.

In May 1959, Zverev visited the United States to attend the Second World Astrometric Conference in Cincinnati, Ohio.

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ZVONKOV, VASILII VASIL'EVICH (Transport Engineer)

V. V. Zvonkov was born January 6, 1891. He graduated in 1917 from the Moscow Institute of Lines of Communication Engineers. Until 1929 he worked in various transport organizations and in 1929-1933 at the Moscow Institute of Lines of Communication Engineers. From 1935 to 1955 he was professor at the Military Transport Academy. He began working in the section on the scientific solution of transportation problems at the U.S.S.R. Academy of Sciences in 1939, and in 1955 at the Institute of Complex Transportation Problems at the U.S.S.R. Academy of Sciences. He has been a Corresponding Member of the U.S.S.R. Academy of Sciences since 1939. In 1948 he was made an Honored Scientist of the R.S.F.S.R. Since 1956 he has been a member of the Communist Party of the Soviet Union.

From 1922 Zvonkov has worked on the restoration, planning, and development of water transport in the U.S.S.R.

As of 1961, Zvonkov was Chairman of the Council for Water Economy. In 1962 he requested to be relieved of his duties as Chairman.

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